BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 03.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 922X

Injection pump
Pump designation : PE6P120A320LS7834-10
EP type number : 0 412 626 853
Governor
Governor design. : RQ300/1050PA972-2
Governer no. : 0 421 801 556

Cust. part no. : 0200741102

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.05...14.15

Del.quantity cm3/ : 21.6...21.8
100 s: (21.3...22.1)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.5
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1500
Del.quantity : 216.5...218.5
1000 : (213.5...221.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.10
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1500
Rack travel mm : 14.05...14.15

Measurement
Speed 1/min : 400

1st pressure hPa : 550
Rack travel in m: 13.20...13.40
5th pressure hPa : -
Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Speed rpm : 500
Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...75.0
1000 s: (41.0...79.0)

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 07.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 939X

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RQV300...950PA797-31
Governer no. : 0 421 813 922

Cust. part no. : 0200742302

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.15...13.25

Del.quantity cm3/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 1.14...1.44
2nd speed rpm : 617
travel mm : 4.98...5.48
3rd speed rpm : 780
travel mm : 6.06...6.56
4th speed rpm : 1009
travel mm : 8.34...8.74
5th speed rpm : 1092
travel mm : 9.75...10.25

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1

Speed rpm : 1020
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950
Aneroid pressure h: 1400
Del.quantity : 203.5...205.5
1000 : (200.5...208.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 12.20
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack trave: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION
Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1400
Rack travel mm : 13.15...13.25

Measurement
Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 11.10...11.30 *
2nd pressure hPa : 400
Rack travel in m: 12.00...12.20 *
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

* Value only applies to initial setting of LDA spring.
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 07.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 940X

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RQ300/950PA971-7
Governer no. : 0 421 801 580

Cust. part no. : 0200742202

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.15...13.25

Del.quantity cm3/ : 20.3...20.5
100 s: (20.0...20.8)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950
Aneroid pressure h: 1400
Del.quantity : 202.5...206.5
1000 : (200.5...208.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.20
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack trave: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1400
Rack travel mm : 13.15...13.25

Measurement
Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 11.10...11.30 *
2nd pressure hPa : 400
Rack travel in m: 12.00...12.20 *
5th pressure hPa : -
Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...204.0
1000 s: (199.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...75.0
1000 s: (41.0...79.0)
Rack travel in mm : 10.30...10.60
* Value only applies to initial setting of LDA spring.
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 6.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 952X

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RQ300/1050PA972-8
Governer no. : 0 421 801 626

Cust. part no. : 0200740902

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.65...12.75

Del.quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1400
Del.quantity : 182.5...184.5
1000 : (179.5...187.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.70
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack trave: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1400
Rack travel mm : 12.65...12.75

Measurement
Speed 1/min : 400

1st pressure hPa : 180
Rack travel in m: 10.40...10.60 *
2nd pressure hPa : -
Rack travel in m: 10.60...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 186.0...188.0
1000 s: (183.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm3/ : 117.5...120.5
1000 s: (114.5...123.5)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...80.0
1000 s: (46.0...84.0)
Rack travel in mm : 10.30...10.70

* Value only applies to initial setting of LDA spring. :
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 26.06.92
Replaces : 01.92
Test oil : ISO-4113

Combination no. : 0 402 646 953

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RQ300/950PA971-8
Governer no. : 0 421 801 625

Cust. part no. : 0200742002

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.90

Del.quantity cm3/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 700
Del.quantity : 164.0...166.0
1000 : (161.0...169.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.50
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1100
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack trave: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement
Speed 1/min : 600

1st pressure hPa : 180
Rack travel in m: 10.40...10.60
2nd pressure hPa : 280
Rack travel in m: 11.30...11.50
3rd pressure hPa : 900
Rack travel in m: 11.80...12.00 *
4th pressure hPa : 1100
Rack travel in m: 12.20...12.40
5th pressure hPa : -
Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm3/ : 187.0...190.0
1000 s: (184.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 190.0...194.0
1000 s: (187.0...197.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.30...10.60
* Increase in control-rod travel with respect to setting at least 0.1 mm
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 3.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 954X

Injection pump
Pump designation : PE6P120A320LS7834-10
EP type number : 0 412 626 853
Governor
Governor design. : RQ300/1050PA993-5
Governer no. : 0 421 801 610

Cust. part no. : 0210740502

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.05...14.15

Del.quantity cm3/ : 21.6...21.8
100 s: (21.3...22.1)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.5
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1500
Del.quantity : 216.5...218.5
1000 : (213.5...221.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.10
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1500
Rack travel mm : 14.05...14.15

Measurement
Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 10.90...11.00 *
2nd pressure hPa : 550
Rack travel in m: 13.20...13.40
4th pressure hPa : -
Rack travel in m: 9.30...9.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)
* Value only applies to initial setting of LDA spring.
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 6.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 957X

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RQV300...1050PA797 -32
Governer no. : 0 421 813 957

Cust. part no. : 0200741002

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant. per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 12.65...12.75
Del.quantity cm3/ : 18.2...18.4
100 s: (17.9...18.7)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 0.50...1.00
2nd speed rpm : 830
travel mm : 5.90...6.40
3rd speed rpm : 1107
travel mm : 8.10...8.60
4th speed rpm : 1190
travel mm : 9.80...10.30
5th speed rpm : 1290
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1

Speed rpm : 1100
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1400
Del.quantity : 182.5...184.5
1000 : (179.5...187.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.70
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 200
Minimum rack trave: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1400
Rack travel mm : 12.65...12.75

Measurement
Speed 1/min : 400

1st pressure hPa : 180
Rack travel in m: 10.80...11.00 *
2nd pressure hPa : -
Rack travel in m: 10.70...10.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 186.0...190.0
1000 s: (183.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm3/ : 117.5...121.5
1000 s: (114.5...123.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:
* Value only applies to initial setting of LDA spring.
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 6.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 958

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RQV300...950PA797-33
Governer no. : 0 421 813 958

Cust. part no. : 0200742102

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.65...12.75

Del.quantity cm3/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 1.00...1.50
2nd speed rpm : 780
travel mm : 6.10...6.60
3rd speed rpm : 1008
travel mm : 8.30...8.80
4th speed rpm : 1092
travel mm : 11.00...10.30
5th speed rpm : 1190
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1

Speed rpm : 1020
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950
Aneroid pressure h: 1400
Del.quantity : 187.5...189.5
1000 : (184.5...192.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 11.70
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 200
Minimum rack trave: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION
Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1400
Rack travel mm : 12.65...12.75

Measurement
Speed 1/min : 400

1st pressure hPa : 180
Rack travel in m: 10.70...10.90 *
5th pressure hPa : -
Rack travel in m: 10.60...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 186.0...190.0
1000 s: (183.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm3/ : 117.5...120.5
1000 s: (114.5...123.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

* Value only applies to initial setting of LDA spring. :
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 07.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 959X

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RQ300/1050PA993-6
Governer no. : 0 421 801 616

Cust. part no. : 0210740402

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.15...13.25

Del.quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1400
Del.quantity : 201.5...203.5
1000 : (198.5...206.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.20
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1400
Rack travel mm : 13.15...13.25

Measurement
Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 11.10...11.40 *
2nd pressure hPa : 400
Rack travel in m: 12.00...12.20 *
5th pressure hPa : -
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)
* Value only applies to initial setting of LDA spring.
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 07.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 960X

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RQ300/950PA993-7
Governer no. : 0 421 801 617

Cust. part no. : 0210740702

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.15...13.25

Del.quantity cm3/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950
Aneroid pressure h: 1400
Del.quantity : 203.5...205.5
1000 : (200.5...208.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.20
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack trave: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1400
Rack travel mm : 13.15...13.25

Measurement
Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 11.10...11.30 *
2nd pressure hPa : 400
Rack travel in m: 12.00...12.20 *
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)
* Value only applies to initial setting of LDA spring.
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 2.11.1993
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 949

Injection pump
Pump designation : PE8P120A320LS7883
EP type number : 0 412 628 874
Governor
Governor design. : RQV300...950PA1050 -2K
Governer no. : 0 421 815 381

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 14.00...15.00
Firing order : 8- 7- 2- 6- 3- 5- 4- 1

Phasing : 0-45-90-135-180-225-270-315
Tolerance + - ° : 0,50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 27.3...27.5

100 s: (27.0...27.8)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.5...6.1
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 1.38...1.88
2nd speed rpm : 350
travel mm : 2.31...2.81
3rd speed rpm : 510
travel mm : 3.27...3.77
4th speed rpm : 790
travel mm : 4.75...5.25
5th speed rpm : 1006
travel mm : 6.75...7.25

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1160
Rack travel in mm : 12.10...14.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950
Aneroid pressure h: 1200
Del.quantity : 273.0...275.0
1000 : (270.0...278.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:
1st rack travel in: 13.40
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70...78

Testing:
Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 14.40...14.50
2nd speed rpm : 750
Rack travel in m: 14.20...14.40
3rd speed rpm : 700
Rack travel in m: 13.95...14.15
4th speed rpm : 650
Rack travel in m: 13.75...13.95
5th speed rpm : 550
Rack travel in m: 13.55...13.75

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 850
Pressure hPa : 1200
Rack travel mm : 14.55...14.75

Measurement
Speed 1/min : 400

1st pressure hPa : 550
Rack travel in m: 12.35...12.45
2nd pressure hPa : 150
Rack travel in m: 8.50...8.90
3rd pressure hPa : -
Rack travel in m: 7.80...8.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 265.0...269.0
1000 s: (262.0...272.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 550
Del.quantity cm3/ : 257.0...263.0
1000 s: (254.0...266.0)
Spread cm3 : 8.0
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 203.0...206.0
1000 s: (200.0...209.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...140.0
1000 s: (116.0...144.0)
Rack travel in mm : 11.20...12.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 31.07.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 402 735 807

Injection pump
Pump designation : PES5P120A720/3LS7250
EP type number : 0 412 725 809
Governor
Governor design. : RQV325...1000PA960-9 K
Governer no. : 0 421 815 309

Customer-spec. information
Customer : MAN

Engine : D2865LF06/LU06

1st version kW : 235.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 26.0...26.2

100 s: (25.7...26.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.8...5.2
Del.quantity cm3/ : 4.7...5.3
100 s: (4.4...5.6)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 1050
travel mm : 10.40...10.60
2nd speed rpm : 300
travel mm : 2.00...2.20
3rd speed rpm : 450
travel mm : 3.50...4.10
4th speed rpm : 750
travel mm : 6.80...7.20
5th speed rpm : 1350
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1115
Rack travel in mm : 9.10...13.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900

Aneroid pressure h: 1200
Del.quantity : 260.0...262.0
1000 : (257.0...265.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 293...301

Testing:
1st rack travel in: 11.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 248...256

Testing:
Speed rpm : 225
Minimum rack trave: 6.50
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 270...340

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 12.20...12.30
2nd speed rpm : 1000
Rack travel in m: 12.00...12.20
3rd speed rpm : 650
Rack travel in m: 11.80...12.00
4th speed rpm : 400
Rack travel in m: 11.10...11.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.20...12.30

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.10...8.30

2nd pressure hPa : 170
Rack travel in m: 8.50...8.60
3rd pressure hPa : 600
Rack travel in m: 11.00...11.30

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm3/ : 245.0...251.0
1000 s: (242.0...254.0)
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 272.0...278.0
1000 s: (269.0...281.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MAN-NR. 3-7203

Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 07.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 735 808

Injection pump
Pump designation : PES5P120A720/3LS7250
EP type number : 0 412 725 809
Governor
Governor design. : RQV325...1000PA962 -10K
Governer no. : 0 421 815 363

Customer-spec. information
Customer : MAN

Engine : D 2865 LUH 03

1st version kW : 235.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 26.0...26.2

100 s: (25.7...26.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 5.2...5.6
Del.quantity cm3/ : 4.7...5.3
100 s: (4.4...5.6)
Spread cm3 : 1.0
100 s: (1.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 325
travel mm : 2.92...3.12
2nd speed rpm : 500
travel mm : 4.22...4.62
3rd speed rpm : 800
travel mm : 5.85...6.25
4th speed rpm : 1055
travel mm : 8.91...9.11
5th speed rpm : 1280
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1115
Rack travel in mm : 9.30...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900

Aneroid pressure h: 1200
Del.quantity : 260.0...262.0
1000 : (257.0...265.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 285...293

Testing:
1st rack travel in: 11.20
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 241...249

Testing:
Speed rpm : 250
Minimum rack trave: 6.90
Speed rpm : 325
Rack travel in mm : 5.20...5.60

CONSTANT REGULATION
Speed rpm : 295...405

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 12.40...12.50
2nd speed rpm : 1000
Rack travel in m: 12.10...12.30
3rd speed rpm : 650
Rack travel in m: 12.10...12.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.40...12.50

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 7.60...7.80
2nd pressure hPa : 200
Rack travel in m: 8.00...8.10

3rd pressure hPa : 750
Rack travel in m: 11.00...11.30

START CUT-OUT

Speed 1/min : 280 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm3/ : 244.0...250.0
1000 s: (241.0...253.0)
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 270.0...276.0
1000 s: (267.0...279.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.05...9.55

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MAN-NR. 3-7294 AE1

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 07.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 735 809

Injection pump
Pump designation : PES5P120A720/3LS7310
EP type number : 0 412 725 817
Governor
Governor design. : RQ325/1000PA1106
Governer no. : 0 421 801 698

Customer-spec. information
Customer : MAN

Engine : D2865LUH05

1st version kW : 198.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
: (5.05...5.25)
Rack travel in mm : 12.30...13.30
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 11.35...11.45

Del.quantity cm3/ : 25.1...25.3

100 s: (24.8...25.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.6...5.0
Del.quantity cm3/ : 3.2...3.8
100 s: (2.9...4.1)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -2
Speed rpm : 700
Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 900
Del.quantity : 251.0...253.0
1000 : (248.0...256.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 700
Rack travel in mm : 15.5

Testing:
1st rack travel in: 11.85

Speed rpm : 1045...1061
2nd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 4.80

Testing:
Speed rpm : 200
Minimum rack trave: 6.50
Speed rpm : 325
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 400...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 2000
Rack travel mm : 12.80...12.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.30...8.50
2nd pressure hPa : 200
Rack travel in m: 8.60...8.70
3rd pressure hPa : 600
Rack travel in m: 10.60...10.90
4th pressure hPa : 900
Rack travel in m: 11.35...11.45
5th pressure hPa : 1150
Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 2000
Speed rpm : 1000
Del.quantity cm3/ : 259.0...266.0
1000 s: (256.0...268.0)
Aneroid pressure h: 2000
Speed rpm : 750
Del.quantity cm3/ : 281.0...285.0
1000 s: (278.0...288.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.85
Speed rpm : 1045...1061

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 65.0...85.0
1000 s: (61.0...89.0)
Rack travel in mm : 8.20...8.60

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MAN-NR. 3-7302

Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 07.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 735 810

Injection pump
Pump designation : PES5P120A720/3LS7310
EP type number : 0 412 725 817
Governor
Governor design. : RQ325/1000PA1106-1
Governer no. : 0 421 801 700

Customer-spec. information
Customer : MAN

Engine : D2865LUH06

1st version kW : 191.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
: (5.05...5.25)
Rack travel in mm : 12.30...13.30
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 10.75...10.85

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 5.1...5.5
Del.quantity cm3/ : 4.0...4.6
100 s: (3.7...5.0)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -2
Speed rpm : 700
Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 750
Del.quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 700
Rack travel in mm : 15.5

Testing:
1st rack travel in: 11.85

Speed rpm : 1045...1061
2nd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.30

Testing:
Speed rpm : 200
Minimum rack trave: 8.40
Speed rpm : 325
Rack travel in mm : 5.2....5.40
Rack travel in mm : 2.00
Speed rpm : 400...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 2000
Rack travel mm : 12.05...12.15

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.30...8.50
2nd pressure hPa : 250
Rack travel in m: 8.70...8.80
3rd pressure hPa : 500
Rack travel in m: 9.90...10.20
4th pressure hPa : 750
Rack travel in m: 10.75...10.85
5th pressure hPa : 1000
Rack travel in m: 10.95...11.15

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 2000
Speed rpm : 750
Del.quantity cm3/ : 260.0...262.0
1000 s: (256.0...266.0)
Aneroid pressure h: 2000
Speed rpm : 1000
Del.quantity cm3/ : 238.0...244.0
1000 s: (235.0...247.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.85
Speed rpm : 1045...1061

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 65.0...85.0
1000 s: (61.0...89.0)
Rack travel in mm : 8.20...8.60

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MAN-NR. 3-7324

Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 w 1
Edition : 14.10.93
Replaces : 05.92
Test oil : ISO-4113

Combination no. : 0 402 736 810

Injection pump
Pump designation : PES6P110A120RS7213
EP type number : 0 412 716 804
Governor
Governor design. : RQV400...1250PA964 -2K
Governer no. : 0 421 815 254

Customer-spec. information
Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 141.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 115...125

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
: (4.30...4.50)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.80...14.90

Del.quantity cm3/ : 16.0...16.2

100 s: (15.7...16.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 3.3...3.9
100 s: (3.1...4.1)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 325
travel mm : 0.70...1.10
2nd speed rpm : 400
travel mm : 1.40...1.60
3rd speed rpm : 600
travel mm : 2.90...3.30
4th speed rpm : 1300
travel mm : 7.20...7.40
5th speed rpm : 1500
travel mm : 9.10...9.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Aneroid pressure h: 1200
Del.quantity : 160.0...162.0
1000 : (157.0...165.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 13.80
Speed rpm : 1295...1305
2nd rack travel in: 4.00
Speed rpm : 1460...1490
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack trave: 7.20
Speed rpm : 400
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 14.80...14.90
2nd speed rpm : 800
Rack travel in m: 13.10...13.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1250
Pressure hPa : 1200
Rack travel mm : 14.80...14.90

Measurement
Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 365
Rack travel in m: 10.20...10.30
3rd pressure hPa : 690
Rack travel in m: 13.20...13.60

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 158.0...164.0
1000 s: (155.0...167.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 95.5...99.5
1000 s: (93.5...101.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1295...1305

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 33.0...39.0
1000 s: (31.0...41.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3921777

Start-of-delivery mark 6° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 21.01.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 736 839

Injection pump
Pump designation : PES6P120A120RS7265
EP type number : 0 412 726 882
Governor
Governor design. : RQV350...1100PA964 -17K
Governer no. : 0 421 815 335

Customer-spec. information
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 167.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 2 417 413 086

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 103

Opening
pressure, bar : 207...210

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05
: (3.90...4.10)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 6.2...6.6
Del.quantity cm3/ : 2.0...2.6
100 s: (1.8...2.8)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 350
travel mm : 2.10...2.40
2nd speed rpm : 450
travel mm : 3.20...3.60
3rd speed rpm : 900
travel mm : 5.60...6.00
4th speed rpm : 1200
travel mm : 8.10...8.30
5th speed rpm : 1400
travel mm : 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del.quantity : 197.0...199.0
1000 : (194.0...202.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 109...121

Testing:
1st rack travel in: 11.90
Speed rpm : 1250...1280
2nd rack travel in: 4.00
Speed rpm : 1380...1390
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 64...76

Testing:
Speed rpm : 275
Minimum rack trave: 7.90
Speed rpm : 350
Rack travel in mm : 6.20...6.60

CONSTANT REGULATION
Speed rpm : 350...500

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 13.20...13.30
2nd speed rpm : 650
Rack travel in m: 12.20...12.60
3rd speed rpm : 1200
Rack travel in m: 12.90...13.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 13.20...13.30

Measurement
Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 8.50...8.90
2nd pressure hPa : 255
Rack travel in m: 9.70...9.80
3rd pressure hPa : 520
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 183.5...189.5
1000 s: (180.5...192.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 1100
Del.quantity cm3/ : 85.0...89.0
1000 s: (83.0...91.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1250...1280

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 195.0...235.0
1000 s: (190.0...240.0)
Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.20...6.60
Del.quantity cm3/ : 20.0...26.0
1000 s: (18.0...28.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
:

Start-of-delivery mark = 5.5° after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 21.01.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 736 839

Injection pump
Pump designation : PES6P120A120RS7265
EP type number : 0 412 726 882
Governor
Governor design. : RQV350...1100PA964 -18K
Governer no. : 0 421 815 336

Customer-spec. information
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 2 417 413 086

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 103

Opening
pressure, bar : 207...210

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05
: (3.90...4.10)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 18.0...18.2

100 s: (17.7...18.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 6.4...6.8
Del.quantity cm3/ : 2.0...2.6
100 s: (1.8...2.8)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 350
travel mm : 2.10...2.40
2nd speed rpm : 450
travel mm : 3.20...3.60
3rd speed rpm : 900
travel mm : 5.60...6.00
4th speed rpm : 1200
travel mm : 8.10...8.30
5th speed rpm : 1400
travel mm : 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del.quantity : 180.0...182.0
1000 : (177.0...185.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 110...122

Testing:
1st rack travel in: 11.40
Speed rpm : 1250...1280
2nd rack travel in: 4.00
Speed rpm : 1380...1390
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...73

Testing:
Speed rpm : 275
Minimum rack trave: 7.90
Speed rpm : 350
Rack travel in mm : 6.40...6.80

CONSTANT REGULATION
Speed rpm : 350...500

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.70...12.80
2nd speed rpm : 650
Rack travel in m: 11.70...12.10
3rd speed rpm : 1200
Rack travel in m: 12.40...12.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 12.70...12.80

Measurement
Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 8.60...9.00
2nd pressure hPa : 255
Rack travel in m: 9.70...9.80
3rd pressure hPa : 520
Rack travel in m: 11.50...11.90

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 167.0...173.0
1000 s: (164.0...176.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 1100
Del.quantity cm3/ : 85.0...89.0
1000 s: (83.0...91.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1250...1280

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...230.0
1000 s: (185.0...235.0)
Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.40...6.80
Del.quantity cm3/ : 20.0...26.0
1000 s: (18.0...28.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
:

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 i
Edition : 14.12.93
Replaces : 18.12.92
Test oil : ISO-4113

Combination no. : 0 402 746 894

Injection pump
Pump designation : PES6P110A320RS7208
EP type number : 0 412 716 803
Governor
Governor design. : RQV275...1175PA942
-1K
Governer no. : 0 421 815 244

Customer-spec. information
Customer : RVI

Engine : MIDR060226 M

1st version kW : 210.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.03...4.13
: (3.98...4.18)

Rack travel in mm : 13.00...14.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.00...14.10
& maximum rack tra: 21.00
Difference ° CS : 2.75...4.25

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 17.0...17.2

100 s: (16.7...17.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.9...2.3
100 s: (1.6...2.5)
Spread cm3 : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 1250
travel mm : 9.10...9.20
2nd speed rpm : 275
travel mm : 0.90...1.10
3rd speed rpm : 550
travel mm : 3.80...4.20
4th speed rpm : 1000
travel mm : 7.00...7.40
5th speed rpm : 1600
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1400
Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175
Aneroid pressure h: 1000
Del.quantity : 170.0...172.0
1000 : (167.5...174.5)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 13.00
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 56...64

Testing:
Speed rpm : 200
Minimum rack trave: 5.80
Speed rpm : 275
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 350...480

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 14.00...14.10
2nd speed rpm : 700
Rack travel in m: 13.25...13.45
3rd speed rpm : 800
Rack travel in m: 13.50...13.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1175
Pressure hPa : 1000
Rack travel mm : 14.00...14.10

Measurement
Speed 1/min : 1175

1st pressure hPa : -
Rack travel in m: 10.40...11.00
2nd pressure hPa : 520
Rack travel in m: 12.50...12.60
3rd pressure hPa : 240
Rack travel in m: 11.10...11.50

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm3/ : 148.0...154.0
1000 s: (145.0...157.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.0...76.0
1000 s: (71.5...78.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...120.0
1000 s: (86.0...124.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.50
Del.quantity cm3/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:
:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 07.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 948

Injection pump
Pump designation : PES6P120A720LS7209-2
EP type number : 0 412 726 898
Governor
Governor design. : RQV300...900PA1006 -1K
Governer no. : 0 421 815 347

Customer-spec. information
Customer : MAN

Engine : D2866LXE

1st version kW : 279.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 12.50...13.50
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
& maximum rack tra: 12.5...13.5
Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.3...4.7
Del.quantity cm3/ : 2.0...2.6
100 s: (1.7...2.9)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 1.57...1.77
2nd speed rpm : 376
travel mm : 2.19...2.59
3rd speed rpm : 530
travel mm : 3.57...3.97
4th speed rpm : 782
travel mm : 6.51...6.91
5th speed rpm : 965
travel mm : 8.76...8.96

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1120

Rack travel in mm : 11.00...13.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 256.0...258.0
1000 : (253.0...261.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 11.20
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1045...1075
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 67...75

Testing:
Speed rpm : 200
Minimum rack trave: 5.50
Speed rpm : 300
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION
Speed rpm : 275...405

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 12.20...12.30
2nd speed rpm : 700
Rack travel in m: 11.70...11.90
3rd speed rpm : 500
Rack travel in m: 11.40...11.26

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 150
Rack travel in m: 9.90...10.00
3rd pressure hPa : 350
Rack travel in m: 9.90...10.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 255.0...261.0
1000 s: (252.0...264.0)
Aneroid pressure h: 1200
Speed rpm : 500
Del.quantity cm3/ : 265.0...271.0
1000 s: (262.0...274.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 166.0...168.0
1000 s: (163.0...171.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MAN-NR. 3-7075

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IVE
Edition : 18.11.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 949

Injection pump
Pump designation : PES6P120A720RS7224-2
EP type number : 0 412 726 893
Governor
Governor design. : RQV275...1100PA975-3_K
Governer no. : 0 421 815 350

Customer-spec. information
Customer : IVECO-FRANCE

Engine : 8460.41.406

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
: (5.05...5.25)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 21.7...21.9
100 s: (21.4...22.2)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.1...5.3
Del.quantity cm3/ : 2.3...2.9
100 s: (2.0...3.2)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 275
travel mm : 1.80...2.00
2nd speed rpm : 430
travel mm : 3.35...3.85
3rd speed rpm : 750
travel mm : 5.85...6.35
4th speed rpm : 1145
travel mm : 10.30...10.50
5th speed rpm : 1360
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1140
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del.quantity : 217.0...219.0
1000 : (214.0...222.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
 position degrees: 115...123

Testing:
1st rack travel in: 11.70
  Speed rpm : 1140...1150
2nd rack travel in: 4.00
  Speed rpm : 1220...1250
4th rack travel in: 1350
  Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
 position degrees: 65...73

Testing:
Speed rpm : 100
Minimum rack trave: 6.70
Speed rpm : 275
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 270...400

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
  Rack travel in m: 12.70...12.80
2nd speed rpm : 900
  Rack travel in m: 12.60...12.80
3rd speed rpm : 500
  Rack travel in m: 11.50...11.70
4th speed rpm : 700
  Rack travel in m: 12.00...12.20
5th speed rpm : 350
  Rack travel in m: 11.00...11.40

Aneroid/Altitude
 Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.70...12.80

Measurement
Speed 1/min : 900

1st pressure hPa : -
  Rack travel in m: 7.40...7.60
2nd pressure hPa : 760
  Rack travel in m: 11.30...11.40
3rd pressure hPa : 410
  Rack travel in m: 8.60...9.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 900
Del.quantity cm3/ : 227.0...233.0
  1000 s: (224.0...236.0)
Aneroid pressure h: 1200
Speed rpm : 500
Del.quantity cm3/ : 240.0...246.0
  1000 s: (237.0...249.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 119.0...121.0
  1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...155.0
  1000 s: (121.0...159.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 23.0...29.0
  1000 s: (20.0...32.0)
Spread cm3 : 8.00
  1000 s: (12.00)

Remarks:
  :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 13.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 958

Injection pump
Pump designation : PES6P120A720LS7209-2
EP type number : 0 412 726 898
Governor
Governor design. : RQV300...900PA1103
Governer no. : 0 421 814 076

Customer-spec. information
Customer : MAN

Engine : D2866LE40

1st version kW : 265.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 12.50...13.50
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.1...5.5
Del.quantity cm3/ : 4.4...5.0
100 s: (4.1...5.3)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 1.12...1.32
2nd speed rpm : 360
travel mm : 1.79...2.19
3rd speed rpm : 410
travel mm : 2.36...2.56
4th speed rpm : 656
travel mm : 4.54...4.94
5th speed rpm : 966
travel mm : 8.35...8.55

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1030
Rack travel in mm : 9.50...12.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900

Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: ?

Testing:
1st rack travel in: 10.20
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1010...1040
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: ?

Testing:
Speed rpm : 200
Minimum rack trave: 5.50
Speed rpm : 300
Rack travel in mm : 5.20...5.40

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MAN-NR. 3-7304/1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 08.12.93
Replaces : –
Test oil : ISO-4113

Combination no. : 0 402 746 963

Injection pump
Pump designation : PES6P120A720LS7244
EP type number : 0 412 726 857
Governor
Governor design. : RQ750PA981-2
Governer no. : 0 421 801 699

Customer-spec. information
Customer : MAN

Engine : D2866 LE

1st version kW : 244.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.70...4.80
: (4.65...4.85)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : ?
Del.quantity cm3/ : 2.0...2.6
100 s: (1.7...2.9)
Spread cm3 : 0.8
100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 275.0...277.0
1000 : (272.0...280.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Testing:
1st rack travel in: 11.40
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 785...794
4th rack travel in: 950
Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 750...755

Remarks:

: MAN-NR. 3-7119
Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 I 1
Edition : 25.01.94
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 403 246 032

Injection pump
Pump designation : PES6MW100/720RS1515
EP type number : 0 413 206 013
Governor
Governor design. : RQV300...1300MW125-2
Governer no. : 0 420 083 285

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 142.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 4.2...4.4
Del.quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 1350
travel mm : 8.60...9.00
2nd speed rpm : 880
travel mm : 4.90...5.10
3rd speed rpm : 500
travel mm : 2.70...3.30
4th speed rpm : 300
travel mm : 1.20...1.60

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1340
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1300
Aneroid pressure h: 1100
Del.quantity : 110.0...112.0
1000 : (108.0...114.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
 position degrees: 120...128

Testing:
1st rack travel in: 11.50
  Speed   rpm   : 1340...1350
2nd rack travel in: 4.00
  Speed   rpm   : 1450...1480
4th rack travel in: 1550
  Speed   rpm   : 0.00...1.00

LOW IDLE 1
Control lever
 position degrees: 62...70
Setting point w/out bumper spring
Speed   rpm   : 300
Rack travel in mm : 4.3

Testing:
Speed   rpm   : 200
Minimum rack trave: 5.00
Speed   rpm   : 300
Rack travel in mm : 4.20...4.40

Aneroid/Altitude
 Compensator Test

1st version
Setting
Speed   rpm   : 500
Pressure   hPa   : -
Rack travel mm   : 9.00...9.10

Measurement
Speed   1/min : 500

1st pressure hPa   : 250
  Rack travel in m: 9.70...9.90
2nd pressure hPa   : 500
  Rack travel in m: 11.45...11.65
3rd pressure hPa   : 1100
  Rack travel in m: 12.50...12.60

START CUT-OUT

Speed   1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed   rpm   : 750
Del.quantity cm3/ : 104.0...108.0
             1000 s: (102.5...110.5)
Spread   cm3   : 5.00
             1000 s: (7.0)
Aneroid pressure h: -

Speed   rpm   : 500
Del.quantity cm3/ : 37.0...39.0
             1000 s: (35.0...41.0)

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 11.50
Speed   rpm   : 1340...1350

STARTING FUEL DELIVERY

Speed   rpm   : 100
Del.quantity cm3/ : 115.0...125.0
             1000 s: (112.0...128.0)

LOW IDLE

Speed   rpm   : 300
Rack travel in mm : 4.20...4.40
Del.quantity cm3/ : 10.0...14.0
             1000 s: (7.5...16.5)
Spread   cm3   : 3.50
             1000 s: (5.50)

Remarks:
                 :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 25.01.94
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 403 246 033

Injection pump
Pump designation : PES6MW100/720RS1511
EP type number : 0 413 206 011
Governor
Governor design. : RQV300...1300MW125-6
Governer no. : 0 420 083 286

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM366LA

1st version kW : 156.0
Rated speed : 2600
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
: (5.15...5.35)

Rack travel in mm : 21.00...0.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed	rpm	: 1300
Rack travel in mm		: 12.60...12.70
Del.quantity	cm3/	: 11.5...11.7
	100 s:	(11.3...11.9)
Spread	cm3	: 0.3
	100 s:	(0.6)

2nd speed rpm : 300.0
Rack travel in mm : 4.1...4.3
Del.quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 1350
travel mm : 8.60...9.00
2nd speed rpm : 880
travel mm : 4.90...5.10
3rd speed rpm : 500
travel mm : 2.70...3.30
4th speed rpm : 300
travel mm : 1.20...1.60

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1340
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1300
Aneroid pressure h: 1400
Del.quantity : 118.0...120.0
1000 : (116.0...122.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 11.60
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 200
Minimum rack trave: 5.00
Speed rpm : 300
Rack travel in mm : 4.10...4.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 6.60...6.80

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 7.20...7.40
2nd pressure hPa : 900
Rack travel in m: 11.90...12.10
3rd pressure hPa : 1400
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 750
Del.quantity cm3/ : 114.5...117.5
1000 s: (112.0...120.0)
Spread cm3 : 5.00
1000 s: (7.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 26.02.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 246 034

Injection pump
Pump designation : PES6MW100/720RS1517
EP type number : 0 413 206 015
Governor
Governor design. : RQV300...1300MW132
Governer no. : 0 420 083 291

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 12.8...13.0

100 s: (12.5...13.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0
Rack travel in mm : 3.7...3.9
Del.quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 1355
travel mm : 8.21...8.71
2nd speed rpm : 1100
travel mm : 6.27...6.77
3rd speed rpm : 720
travel mm : 4.61...5.11
4th speed rpm : 555
travel mm : 4.06...4.56
5th speed rpm : 505
travel mm : 3.60...4.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1300
Aneroid pressure h: 1400
Del.quantity : 128.0...130.0
1000 : (125.0...133.0)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 13.10
  Speed rpm : 1340...1350
2nd rack travel in: 4.00
  Speed rpm : 1460...1490
4th rack travel in: 1600
  Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
 position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 3.8

Testing:
Speed rpm : 200
Minimum rack trave: 5.00
Speed rpm : 300
Rack travel in mm : 3.70...3.90

Aneroid/Altitude
 Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1400
Rack travel mm : 14.10...14.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
  Rack travel in m: 9.60...9.80
2nd pressure hPa : 500
  Rack travel in m: 10.70...10.80
3rd pressure hPa : 850
  Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 1300
Del.quantity cm3/ : 128.0...130.0
1000 s: (125.0...133.0)
Spread cm3 : 6.00
1000 s: (9.0)
Aneroid pressure h: 1400
Speed rpm : 750
Del.quantity cm3/ : 128.0...132.0
1000 s: (125.0...135.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 13.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...145.0
1000 s: (132.0...148.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.70...3.90
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 05.10.92
Replaces : 11.92
Test oil : ISO-4113

Combination no. : 0 403 446 314

Injection pump
Pump designation : PES6MW100/320RS1227
EP type number : 0 413 406 215
Governor
Governor design. : RQV325/1300MW129
Governer no. : 0 420 082 070

Customer-spec. information
Customer : DAF

Engine : NS156L

1st version kW : 156.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 13.50...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0
Rack travel in mm : 4.4...4.6
Del.quantity cm3/ : 0.7...1.1
100 s: (0.4...1.3)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 1360
travel mm : 6.30...6.70
2nd speed rpm : 1300
travel mm : 5.90...6.10
3rd speed rpm : 450
travel mm : 3.50...4.10
4th speed rpm : 325
travel mm : 1.70...2.10

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 800
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 110.0...112.0
1000 : (108.0...114.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 90...98

Setting point:
Speed rpm : 800
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.00
Speed rpm : 1345...1360
2nd rack travel in: 4.00
Speed rpm : 1440...1470
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 4.5

Testing:
Speed rpm : 225
Minimum rack trave: 6.00
Speed rpm : 325
Rack travel in mm : 4.40...4.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.10...13.20

Measurement
Speed 1/min : 600

1st pressure hPa : 390
Rack travel in m: 12.20...12.30
2nd pressure hPa : 190
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 10.00...10.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1300
Del.quantity cm3/ : 105.5...108.5
1000 s: (103.0...111.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm3/ : 63.0...65.0
1000 s: (61.0...67.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.40...4.60
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: # DAF1249932

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,2 Q
Edition : 25.01.94
Replaces : 08.91
Test oil : ISO-4113

Combination no. : 0 403 456 111

Injection pump
Pump designation : PES6MW100/321RS1186
EP type number : 0 413 406 168
Governor
Governor design. : RQ250/1200MW84-4
Governer no. : 0 420 082 044

Customer-spec. information
Customer : MAN

Engine : D 0826 LUH

1st version kW : 157.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 15.00...0.00

C01

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 13.3...13.5

100 s: (13.0...13.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0
Rack travel in mm : 5.5...5.7
Del.quantity cm3/ : 1.9...2.3
100 s: (1.6...2.5)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 1280
travel mm : 9.50...9.90
2nd speed rpm : 1250
travel mm : 7.50...7.70
3rd speed rpm : 350
travel mm : 5.20...5.80
4th speed rpm : 250
travel mm : 2.20...2.60

GUIDE SLEEVE POSITION
Control-lever position
Degree: 109
Speed rpm : 600
Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 133.0...135.0
1000 : (130.0...138.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 104...112

Setting point:
Speed rpm : 600
Rack travel in mm : 15.5

Testing:
1st rack travel in: 11.50
Speed rpm : 1245...1260
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1400
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.6

Testing:
Speed rpm : 100
Minimum rack trave: 7.00
Speed rpm : 250
Rack travel in mm : 5.50...5.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.00...10.10

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.30...10.40
2nd pressure hPa : 500
Rack travel in m: 12.00...12.30
3rd pressure hPa : 1000
Rack travel in m: 12.80...12.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 131.5...135.5
1000 s: (128.5...138.5)
Spread cm3 : 6.0
1000 s: (9.0)
Aneroid pressure h: 1000
Speed rpm : 1200
Del.quantity cm3/ : 129.5...133.5
1000 s: (126.5...136.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 70.0...90.0
1000 s: (67.0...93.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: MAN #3-7008

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a
Edition : 27.09.93
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 9 400 083 449

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A2C2209 R
Governer no. : 9 420 083 201

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3 l

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 9.0...9.2

100 s: (8.8...9.4)

Spread cm3 : 0.3

100 s: (0.8)

2nd speed rpm : 400.0
Rack travel in mm : 5.6...5.8
Del.quantity cm3/ : 1.6...2.0
100 s: (1.4...2.3)
Spread cm3 : 0.5
100 s: (0.9)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 90.0...92.0
1000 : (88.0...94.0)
Spread cm3 : 3.50
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 85...93

Testing:

1st rack travel in: 9.30
  Speed rpm : 1140...1150
2nd rack travel in: 4.00
  Speed rpm : 1170...1200
4th rack travel in: 1300
  Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
 position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
  Rack travel in m: 10.30...10.40
2nd speed rpm : 500
  Rack travel in m: 10.30...10.50
5th speed rpm : 400
  Rack travel in m: 10.70...11.20

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm3/ : 75.0...79.0
 1000 s: (73.0...81.0)

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 9.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 134.0...150.0
 1000 s: (131.0...153.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80

C04

Del.quantity cm3/ : 16.5...20.5
 1000 s: (14.0...23.0)
Spread cm3 : 5.50
 1000 s: (9.00)

Remarks:
 :

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 27.09.93
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 083 451CG

Injection pump
Pump designation : PES6A100D320/3RS2691 -2
EP type number : 9 410 230 028
Governor
Governor design. : RQV350...1100AB1218R
Governer no. : 9 420 080 214

Cust. part no. : 3352896-VERSA026

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT-8.3 L

1st version kW : 130.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 9.9...10.1
100 s: (9.7...10.3)

Spread cm3 : 0.3
100 s: (0.8)

2nd speed rpm : 350.0
Rack travel in mm : 5.8...6.0
Del.quantity cm3/ : 1.3...1.7
100 s: (1.0...1.9)
Spread cm3 : 0.5
100 s: (0.9)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 1100
travel mm : 8.40...8.50
2nd speed rpm : 350
travel mm : 2.20...2.60
3rd speed rpm : 500
travel mm : 3.90...4.20
4th speed rpm : 800
travel mm : 5.60...5.90

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1090
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 700
Del.quantity : 99.0...101.0
1000 : (97.0...103.0)
Spread cm3 : 3.50
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 10.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 69...77

Testing:
Speed rpm : 100
Minimum rack trave: 10.00
Speed rpm : 350
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION
Speed rpm : 350...500

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.50...11.60
2nd speed rpm : 750
Rack travel in m: 11.80...11.90
3rd speed rpm : 890
Rack travel in m: 11.80...11.90
4th speed rpm : 1020
Rack travel in m: 11.50...11.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.80...11.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.30
2nd pressure hPa : 340
Rack travel in m: 10.60...10.70
3rd pressure hPa : 440
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 98.5...102.5
1000 s: (96.5...104.5)
Aneroid pressure h: 700
Speed rpm : 890
Del.quantity cm3/ : 101.0...105.0
1000 s: (99.0...107.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 65.0...67.0
1000 s: (63.0...69.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 156.0...186.0
1000 s: (-)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm3 : 5.50
1000 s: (9.00)

Remarks:
:

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,

cylinder 1

C07

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a 5
Edition : 27.09.93
Replaces : 09.92
Test oil : ISO-4113

Combination no. : 9 400 083 454

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...900A7C2209-1R
Governer no. : 9 420 083 232

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.8...13.0

100 s: (12.6...13.2)

Spread cm3 : 0.3

100 s: (0.8)

2nd speed rpm : 400.0
Rack travel in mm : 5.6...5.8
Del.quantity cm3/ : 1.6...2.0
100 s: (1.4...2.3)
Spread cm3 : 0.5
100 s: (0.9)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Del.quantity : 128.5...130.5
1000 : (126.5...132.5)
Spread cm3 : 3.50
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 104...112

Testing:

1st rack travel in: 11.70
  Speed rpm : 943...948
2nd rack travel in: 4.00
  Speed rpm : 977...986
4th rack travel in: 1100
  Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
 position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 410...470

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 900
  Rack travel in m: 12.70...12.80
2nd speed rpm : 550
  Rack travel in m: 12.70...12.90
5th speed rpm : 400
  Rack travel in m: 14.00...14.60

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 11.70
Speed rpm : 943...948

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 134.0...150.0
  1000 s: (131.0...153.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 16.5...20.5
  1000 s: (14.0...23.0)
Spread cm3 : 5.50
  1000 s: (9.00)

Remarks:
  :

C09

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 x
Edition : 27.09.93
Replaces : 6.93
Test oil : ISO-4113

Combination no. : 9 400 083 459

Injection pump
Pump designation : PES6A95D120RS2822
EP type number : 9 400 084 029
Governor
Governor design. : RQV350...1250AB1235-2R
Governer no. : 9 420 080 311

Customer-spec. information
Customer : CUMMINS

Engine : 6 BT

1st version kW : 119.3
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
: (2.70...2.90)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.8)

2nd speed rpm : 350.0
Rack travel in mm : 5.5...5.7
Del.quantity cm3/ : 1.0...1.4
100 s: (0.8...1.7)
Spread cm3 : 0.5
100 s: (0.9)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 1300
travel mm : 6.80...6.90
2nd speed rpm : 350
travel mm : 1.20...1.70
3rd speed rpm : 700
travel mm : 4.00...4.50
4th speed rpm : 1550
travel mm : 8.30...8.80

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1530
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250
Aneroid pressure h: 600
Del.quantity : 86.0...88.0
1000 : (84.0...90.0)
Spread cm3 : 3.50
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:
1st rack travel in: 11.70
Speed rpm : 1310...1320
2nd rack travel in: 4.00
Speed rpm : 1545...1575
4th rack travel in: 1750
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 64...72

Testing:
Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 350
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION
Speed rpm : 475...575

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 12.70...12.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.60...11.90
2nd pressure hPa : 320
Rack travel in m: 11.70...11.80 *
3rd pressure hPa : 410
Rack travel in m: 12.30...12.50

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 600
Speed rpm : 700
Del.quantity cm3/ : 79.5...83.5
1000 s: (77.0...86.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 64.0...67.0
1000 s: (62.0...69.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...135.0
1000 s: (110.0...140.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 10.5...14.5
1000 s: (8.0...17.0)
Spread cm3 : 5.50
1000 s: (9.00)

Remarks:
: C.D.C. # 3355394

Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet	: MB 4,0 a 8
Edition	: 16.08.93
Replaces	: 05.89
Test oil	: ISO-4113
Combination no.	: 9 400 085 295
Injection pump	
Pump designation	: PES4A90D410RS2666
EP type number	: 0 410 894 029
Governor	
Governor design.	: RQV300...1400AB1065-5L
Governer no.	: 0 420 212 169
Customer-spec. information	
Customer	: MBB
Engine	: OM364
1st version kW	: 66.0
Rated speed	: 2800

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C	: 38...42
Overflow valve	: 1 419 992 198
Inlet press., bar	: 1.50
Test nozzle holder assembly	: 0 681 343 009
Opening pressure, bar	: 172...175
Test lines	: 1 680 750 015
Outside diameter x Wall thickness x Length mm	: 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant. per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm	: 2.25...2.35
	: (2.20...2.40)
Rack travel in mm	: 9.00...12.00
Firing order	: 1- 3- 4- 2
Phasing	: 0-90-180-270
Tolerance + - °	: 0.50 (0.75)

BASIC SETTING

1st speed rpm	: 1400
Rack travel in mm	: 10.90...11.00
Del.quantity cm3/	: 6.3...6.4
100 s:	(6.1...6.6)
Spread cm3	: 0.3
100 s:	(0.7)
2nd speed rpm	: 300.0
Rack travel in mm	: 8.6...8.8
Del.quantity cm3/	: 0.8...1.2
100 s:	(0.6...1.4)
Spread cm3	: 0.4
100 s:	(0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm	: 300
travel mm	: 0.80...1.30
2nd speed rpm	: 500
travel mm	: 2.30...2.80
3rd speed rpm	: 750
travel mm	: 4.10...4.30
4th speed rpm	: 1500
travel mm	: 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position	
Degree:	-1
Speed rpm	: 1500
Rack travel in mm	: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version	
Speed rpm	: 1400
Del.quantity	: 63.0...64.0
1000	: (61.0...66.0)
Spread cm3	: 3.00
1000	: (7.00)

RATED SPEED

1st version
Control lever
 position degrees: 107...115

Testing:
1st rack travel in: 9.90
  Speed   rpm   : 1450...1460
2nd rack travel in: 4.00
  Speed   rpm   : 1560...1590
4th rack travel in: 1700
  Speed   rpm   : 0.00...1.00

LOW IDLE 1
Control lever
 position degrees: 68...76

Testing:
Speed   rpm   : 100
Minimum rack trave: 10.00
Speed   rpm   : 300
Rack travel in mm : 8.60...8.30

CONSTANT REGULATION
Speed   rpm   : 540...680

TORQUE CONTROL
Dimension a mm   : 1.30
Torque control curve - 1st version
1st speed   rpm   : 1400
  Rack travel in m: 10.90...11.00
2nd speed   rpm   : 800
  Rack travel in m: 12.20...12.30
3rd speed   rpm   : 1150
  Rack travel in m: 11.60...11.80

START CUT-OUT

Speed   1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed   rpm   : 800
Del.quantity cm3/ : 58.0...61.0
             1000 s: (56.0...63.0)
Speed   rpm   : 1150
Del.quantity cm3/ : 64.5...67.5
             1000 s: (62.5...69.5)

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 9.90
Speed   rpm   : 1450...1460

STARTING FUEL DELIVERY

Speed   rpm   : 100
Del.quantity cm3/ : 75.5...90.5
             1000 s: (73.0...93.0)
Rack travel in mm : 17.00...17.40

Remarks:
                   :

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 14.10.93
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 085 363

Injection pump
Pump designation : PES6A95D410RS2772
EP type number : 9 400 084 018
Governor
Governor design. : RQV300...1300AB1277L
Governer no. : 9 420 080 355

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 366 A

1st version kW : 125.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 9.0...9.2

100 s: (8.8...9.4)

Spread cm3 : 0.3

100 s: (0.8)

2nd speed rpm : 300.0
Rack travel in mm : 6.9...7.1
Del.quantity cm3/ : 0.9...1.3
100 s: (0.6...1.1)
Spread cm3 : 0.5
100 s: (0.9)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 0.80...1.30
2nd speed rpm : 500
travel mm : 2.30...2.80
3rd speed rpm : 750
travel mm : 4.10...4.30
4th speed rpm : 1500
travel mm : 8.50...8.60

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1500
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1300
Aneroid pressure h: 800
Del.quantity : 90.0...92.0
1000 : (88.0...94.0)
Spread cm3 : 3.50
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 104...112

Testing:
1st rack travel in: 9.50
Speed rpm : 1345...1355
2nd rack travel in: 4.00
Speed rpm : 1460...1490
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 64...72

Testing:
Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION
Speed rpm : 250...400

TORQUE CONTROL
Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.50...10.60
2nd speed rpm : 800
Rack travel in m: 11.20...11.30
4th speed rpm : 1000
Rack travel in m: 10.90...11.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 11.40...11.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.90
2nd pressure hPa : 310
Rack travel in m: 10.00...10.30
3rd pressure hPa : 500
Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

C15

1st version
Aneroid pressure h: 800
Speed rpm : 800
Del.quantity cm3/ : 87.5...91.5
1000 s: (85.5...93.5)
Aneroid pressure h: 800
Speed rpm : 1000
Del.quantity cm3/ : 89.5...93.5
1000 s: (87.5...95.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.0...63.0
1000 s: (59.0...65.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1345...1355

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 75.0...90.0
1000 s: (72.5...92.5)
Rack travel in mm : 13.20...13.40

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 27.09.93
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 085 364

Injection pump
Pump designation : PES6A100D120RS2849
EP type number : 9 400 084 035
Governor
Governor design. : RSV450...900A7C2270R
Governer no. : 9 420 083 294

Customer-spec. information
Customer : CUMMINS

Engine : 6 BT

1st version kW : 124.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 870

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 11.6...11.8
100 s: (11.4...12.0)

Spread cm3 : 0.3
100 s: (0.8)

2nd speed rpm : 450.0
Rack travel in mm : 4.4...4.6
Del.quantity cm3/ : 1.7...2.1
100 s: (1.4...2.3)
Spread cm3 : 0.5
100 s: (0.9)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 870
Del.quantity : 116.5...118.5
1000 : (114.5...120.5)
Spread cm3 : 3.50
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 97...105

Testing:
1st rack travel in: 9.30
  Speed rpm : 915...920
2nd rack travel in: 4.00
  Speed rpm : 929...942
4th rack travel in: 1000
  Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
 position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.0

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 450
Rack travel in mm : 3.90...4.10
Rack travel in mm : 2.00
Speed rpm : 445...505

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 870
  Rack travel in m: 10.30...10.40
2nd speed rpm : 550
  Rack travel in m: 10.30...10.50
5th speed rpm : 400
  Rack travel in m: 11.80...12.40

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 9.30
Speed rpm : 915...920

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 161.0...177.0
  1000 s: (158.0...180.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 450
Rack travel in mm : 4.40...4.60
Del.quantity cm3/ : 17.0...21.0
  1000 s: (14.5...23.5)
Spread cm3 : 5.50
  1000 s: (9.00)

Remarks:

C17

: C.D.C # 3355362

Start-of-delivery mark is 8° after start of delivery with control-rod travel = 10.5 mm.

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 27.09.93
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 085 364DJ

Injection pump
Pump designation : PES6A100D120RS2849
EP type number : 9 400 084 035
Governor
Governor design. : RSV450...900A7C2270R
Governer no. : 9 420 083 294

Cust. part no. : 3355363-VERSA039

Customer-spec. information
Customer : CUMMINS

Engine : 6 BT

1st version kW : 101.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 193

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3 50...4.50

BASIC SETTING

1st speed rpm : 870

Rack travel in mm : 8.90...9.00

Del.quantity cm3/ : 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.8)

2nd speed rpm : 450.0
Rack travel in mm : 4.4...4.6
Del.quantity cm3/ : 1.7...2.1
100 s: (1.4...2.3)
Spread cm3 : 0.5
100 s: (0.9)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 870
Del.quantity : 94.5...96.5
1000 : (92.5...98.5)
Spread cm3 : 3.50
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 97...105

Testing:
1st rack travel in: 7.90
Speed rpm : 915...920
2nd rack travel in: 4.00
Speed rpm : 925...938
4th rack travel in: 10.00
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.0

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 450
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 445...505

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 870
Rack travel in m: 8.90...9.00
2nd speed rpm : 550
Rack travel in m: 8.90...9.10
5th speed rpm : 400
Rack travel in m: 10.40...11.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 7.90
Speed rpm : 915...920

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 161.0...177.0
1000 s: (158.0...180.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 450
Rack travel in mm : 4.40...4.60
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)

Spread cm3 : 5.50
1000 s: (9.00)

Remarks:
Start-of-delivery mark is 8° after start of delivery with control-rod travel = 10.5 mm.

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 27.09.93
Replaces : 08.93
Test oil : ISO-4113

Combination no. : 9 400 087 449EB

Injection pump
Pump designation : PES6P120A320/3RS3264
EP type number : 9 400 087 C75
Governor
Governor design. : RQV350...1100PA973
Governer no. : 9 420 080 293

Cust. part no. : 3355296-VERSA041

Customer-spec. information
Customer : CUMMINS

Engine : 6 CTA - 8.3 l

1st version kW : 194.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.45...3.55
: (3.40...3.60)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-130-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 18.9...19.1
100 s: (18.6...19.4)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.9...6.1
Del.quantity cm3/ : 0.5...1.1
100 s: (0.3...1.3)
Spread cm3 : 0.5
100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 1150
travel mm : 7.00...7.10
2nd speed rpm : 350
travel mm : 1.40...1.80
3rd speed rpm : 650
travel mm : 4.30...4.70
4th speed rpm : 1400
travel mm : 8.80...9.20

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1325
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del.quantity : 189.0...191.0
1000 : (186.0...194.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 10.00
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 66...74

Testing:
Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 425...575

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 430
Rack travel in m: 9.40...9.50
3rd pressure hPa : 700
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 700

Del.quantity cm3/ : 187.0...191.0
1000 s: (184.0...194.0)
Spread cm3 : 6.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 116.0...119.0
1000 s: (114.0...121.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...290.0
1000 s: (256.0...294.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 5.0...11.0
1000 s: (3.0...13.0)
Spread cm3 : 5.00
1000 s: (8.00)

Remarks:
:
Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 14.10.93
Replaces : 01.93
Test oil : ISO-4113

Combination no. : 9 400 087 464

Injection pump
Pump designation : PES6P120A720LS7257
-10
EP type number : 9 400 087 086
Governor
Governor design. : RQV300...1050PA1029
Governer no. : 9 420 080 325

Customer-spec. information
Customer : MBB

Engine : OM 447 LA

1st version kW : 257.6
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70
: (4.55...4.75)
Rack travel in mm : 21.00...0.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 24.1...24.3

100 s: (23.8...24.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 1050
travel mm : 7.70...7.90
2nd speed rpm : 300
travel mm : 0.50...1.00
3rd speed rpm : 500
travel mm : 3.00...3.50
4th speed rpm : 700
travel mm : 5.20...5.70
5th speed rpm : 1165
travel mm : 9.20...9.70

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1120
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700

Aneroid pressure h: 1000
Del.quantity : 241.0...243.0
1000 : (238.0...246.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 250...400

TORQUE CONTROL
Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.20...13.30
2nd speed rpm : 700
Rack travel in m: 13.40...13.50
3rd speed rpm : 800
Rack travel in m: 13.40...13.50
4th speed rpm : 950
Rack travel in m: 13.20...13.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.40...13.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40

2nd pressure hPa : 350
Rack travel in m: 10.80...11.00
3rd pressure hPa : 600
Rack travel in m: 12.30...12.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 230.0...234.0
1000 s: (227.0...237.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 125.0...127.0
1000 s: (122.0...130.0)
Spread cm3 : 5.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...270.0
1000 s: (246.0...274.0)

Remarks:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : VM
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L503
Type number : 0 460 404 075
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 425 SLIRF

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 500
Charge press. hPa: 1000
Setting value mm: 7.50...7.90
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 500
Charge press hPa: 1000
Setting value bar: 5.60...6.20

Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 65.50...66.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 43.50...44.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 10.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 35.00...41.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 48.00...82.00
mind 1000S.: 48.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 9.30...10.30
mm: (9.10...10.50)
Timing valve Volt: -

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 7.50...7.90
mm: (7.00...8.40)
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
4th speed 1/min: 150
Charge press hPa: 1000
TD travel mm: 3.70...7.30
mm: (3.70...7.30)
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
5th speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 0.00...1.00
mm: (0.00...1.00)
Timing valve Volt: 12
Shutoff
electromagnet Volt: 12
6th speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 8.50...9.50
mm: (8.30...9.70)
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
7.Rotacao 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 0.00...0.60
mm: (0.00...0.60)
Timing valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.70...8.30
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.20...6.80
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.60...6.20
Timing valve Volt: -

Shutoff
electromagnet Volt: 12
4th speed 1/min: 150
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.00...5.60
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 27.80...139.00
quantity cm3/10s: (27.80...139.00)
2nd speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...166.80
quantity cm3/10s: (55.60...166.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 55.50...56.50
1000S.: (53.50...58.50)
3rd speed 1/min: 2460
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.50...11.50
1000S.: (3.50...11.50)
5th speed 1/min: 2300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 35.00...41.00
1000S.: (34.00...42.00)
9th speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 62.00...65.00
1000S.: (60.50...66.50)
12th speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 65.50...66.50
1000S.: (64.00...68.00)
18th speed 1/min: 700

Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 43.50...44.50
1000S.: (41.50...46.50)
20th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 67.50...70.50
1000S.: (66.00...72.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 10.00...14.00
1000S.: (7.00...17.00)
Dispersion cm3/: 3.0
1000S.: (3.0)
2nd speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 1.50...6.50
1000S.: (0.00...8.00)
3rd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.50...8.50
1000S.: (1.00...11.00)

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 49.00...51.00
1000S.: (47.50...52.50)

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 48.00...82.00
1000S.: (48.00...82.00)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 30.00...50.00
1000S.: (30.00...50.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 48.00...82.00
1000S.: (48.00...82.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.2...5.6
MS mm: 0.6...1.0
Ya mm: 43.2...45.2
Yb mm: 23.5...30.5

Ajustement Potentiometer:

Supply voltage
pot. volt: 5.00
Output volt
pot. volt: 2.31

Remarks:
:
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : MAN
Edition : 12.93
replaces : 12.92
Calibrating oil : ISO-4113

Injection pump : VE4/10F1350R418-2
Type number : 0 460 404 076
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0824 GF 03

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 2.20...2.60
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 6.40...7.00
Shutoff
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 78.00...79.00
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 7.00...13.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1420
Del. quantity cm3/
1000S.: 58.00...62.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 64.00...66.00
mind 1000S.: 57.0
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200
TD travel mm: 4.30...5.10
mm: (4.00...5.40)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
TD travel mm: 2.20...2.60
mm: (1.70...3.10)
Shutoff
electromagnet Volt: 24
4th speed 1/min: 900

TD travel mm: 1.00...1.80
mm: (0.70...2.10)
Shutoff
electromagnet Volt: 24
5th speed 1/min: 1350
TD travel mm: 6.00...6.80
mm: -
Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 4.40...5.00
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Supply-pump
pressure bar: 6.40...7.00
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1200
Supply-pump
pressure bar: 7.40...8.00
Shutoff
electromagnet Volt: 24

Overlow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1350
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm3/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1550
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1510
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...15.00
1000S.: (0.00...15.00)
4th speed 1/min: 1460
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 15.00...45.00
1000S.: (15.00...45.00)
5th speed 1/min: 1420
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 58.00...62.00
1000S.: (53.50...66.50)
9th speed 1/min: 1350
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 77.70...80.70
1000S.: (76.20...82.20)
12th speed 1/min: 1000
Shutoff
electromagnet Volt: 24
Del. quyntity cm3/: 78.00...79.00
1000S.: (76,00...81.00)
15th speed 1/min: 800
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 79.00...83.00
1000S.: (77.50...84.50)
20th speed 1/min: 600
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 65.00...71.00
1000S.: (64.00...72.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1350
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 7.00...13.00
1000S.: (4.50...15.50)
Dispersion cm3/: 3.5
1000S.: (3.5)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 350

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 65.00...105.00
1000S.: (65.00...105.00)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 40.00...70.00
1000S.: (40.00...70.00)

3rd speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 64.00...66.00
1000S.: MIN. 57.0

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation		
K	mm:	-
KF	mm:	5.0...5.4
MS1	mm:	1.0...1.2
Ya	mm:	37.4...41.4
Yb	mm:	39.4...44.6

Remarks:
: MAN 51.11103-721
:
Overflow restriction 0.55 mm - Part No. ..303

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Pump with slave plunger

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : VM
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L553
Type number : 0 460 404 078
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 425 CLIRZ / CLIRX

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 500
Charge press. hPa: 1000
Setting value mm: 7.50...7.90
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 500
Charge press hPa: 1000
Setting value bar: 5.60...6.20

Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 67.50...68.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 44.00...45.00
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 10.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 46.00...52.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 48.00...82.00
mind 1000S.: 48.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 9.30...10.30
mm: (9.10...10.50)
Timing valve Volt: -

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 7.50...7.90
mm: (7.00...8.40)
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
4th speed 1/min: 150
Charge press hPa: 1000
TD travel mm: 3.70...7.30
mm: (3.70...7.30)
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
5th speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 0.00...1.00
mm: (0.00...1.00)
Timing valve Volt: 12
Shutoff
electromagnet Volt: 12
6th speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 8.50...9.50
mm: (8.30...9.70)
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
7.Rotacao 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 0.00...0.60
mm: (0.00...0.60)
Timing valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.70...8.30
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.20...6.80
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.60...6.20
Timing valve Volt: -

Shutoff
electromagnet Volt: 12
4th speed 1/min: 150
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.00...5.60
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 27.80...139.00
quantity cm3/10s: (27.80...139.00)
2nd speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...166.80
quantity cm3/10s: (55.60...166.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 58.00...59.00
1000S.: (56.00...61.00)
2nd speed 1/min: 2650
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 2450
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.00...14.00
1000S.: (5.00...15.00)
5th speed 1/min: 2300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 46.00...52.00
1000S.: (45.00...53.00)
9th speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 62.00...65.00
1000S.: (60.50...66.50)
12th speed 1/min: 1500

Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 67.50...68.50
1000S.: (66.00...70.00)
18th speed 1/min: 700
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 43.00...44.00
1000S.: (41.00...46.00)
20th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 69.50...72.50
1000S.: (68.00...74.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 10.00...14.00
1000S.: (7.00...17.00)
Dispersion cm3/: 3.0
1000S.: (3.0)
2nd speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 1.50...6.50
1000S.: (0.00...8.00)
3rd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.50...8.50
1000S.: (1.00...11.00)

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 49.00...51.00
1000S.: (47.50...52.50)

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 48.00...82.00
1000S.: (48.00...82.00)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 30.00...50.00
1000S.: (30.00...50.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 48.00...82.00
1000S.: (48.00...82.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.2...5.6
MS mm: 0.6...1.0
Ya mm: 29.5...31.5
Yb mm: 47.0...57.0

Ajustement Potentiometer:

Supply voltage
pot. volt: 5.00
Output volt
pot. volt: 2.31

Remarks:
:
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : MAN
Edition : 12.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/10F1350R418-3
Type number : 0 460 404 080
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0824 FL 01

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 2.20...2.60

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 6.40...7.00

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 78.00...79.00
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 7.00...13.00
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1420
Del. quantity cm3/
1000S.: 58.00...62.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 64.00...66.00
mind 1000S.: 57.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200
TD travel mm: 4.30...5.10
mm: (4.00...5.40)
3rd speed 1/min: 1000
TD travel mm: 2.20...2.60
mm: (1.70...3.10)
4th speed 1/min: 900
TD travel mm: 1.00...1.80
mm: (0.70...2.10)
5th speed 1/min: 1350
TD travel mm: 6.00...6.80
mm: -

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 4.40...5.00
2nd speed 1/min: 1000
Supply-pump
pressure bar: 6.40...7.00
3rd speed 1/min: 1200

Supply-pump
pressure bar: 7.40...8.00

Overlow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1350
Overflow : 55.60...139.00
quantity cm3/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1550
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1510
Del. quantity cm3/: 0.00...15.00
1000S.: (0.00...15.00)
4th speed 1/min: 1460
Del. quantity cm3/: 15.00...45.00
1000S.: (15.00...45.00)
5th speed 1/min: 1420
Del. quantity cm3/: 58.00...62.00
1000S.: (53.50...66.50)
9th speed 1/min: 1350
Del. quantity cm3/: 77.70...80.70
1000S.: (76.20...82.20)
12th speed 1/min: 1000
Del. quyntity cm3/: 78.00...79.00
1000S.: (76,00...81.00)
15th speed 1/min: 800
Del. quantity cm3/: 79.00...83.00
1000S.: (77.50...84.50)
20th speed 1/min: 600
Del. quantity cm3/: 65.00...71.00
1000S.: (64.00...72.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1350
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm3/: 7.00...13.00
1000S.: (4.50...15.50)
Dispersion cm3/: 3.5
1000S.: (3.5)
2nd speed 1/min: 450
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm3/: 65.00...105.00
1000S.: (65.00...105.00)

2nd speed 1/min: 450
Del. quantity cm3/: 40.00...70.00
1000S.: (40.00...70.00)

3rd speed 1/min: 100
Del. quantity cm3/: 64.00...66.00
1000S.: MIN.57.0

Mounting and assembly dimensions:

Designation		
K	mm:	-
KF	mm:	5.0...5.4
MS1	mm:	1.0...1.2
Ya	mm:	37.4...40.4
Yb	mm:	39.4...44.6

Remarks:
:
Overflow restriction 0.55 mm - Part No. ..303

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Pump with slave plunger

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : FOR
Edition : 12.93
replaces : 10.04.92
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R415-2
Type number : 0 460 414 089
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5l DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 114

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.35
mm: 0.30...0.40
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.80...4.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 6.90...7.50
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 25,8...26.2 F
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 6.00...8.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm3/
1000S.: 23.50...25.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (4.0)

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...80.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.00...7.80
mm: (6.70...8.10)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250

TD travel mm: 3.80...4.20
mm: (3.50...4.50)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 1.30...2.10
mm: (1.00...2.40)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 5.20...5.80
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump
pressure bar: 6.40...7.00
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Supply-pump
pressure bar: 6.90...7.50
Shutoff
electromagnet Volt: 12
4th speed 1/min: 2000
Supply-pump
pressure bar: 8.60...9.20
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 97.30...141.70
quantity cm3/10s: (82.30...156.70)
2nd speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Overflow : 115.30...184.80
quantity cm3/10s: (100.30...199.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 1950
HBA-stroke mm: 7.7
Shutoff
electromagnet Volt: 12.0
Del. quantity cm3/: 36.5...38.9 D
1000S.: (35.2...40.2) D
2nd speed 1/min: 2400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...5.00
1000S.: -

5th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 23.50...25.50
1000S.: (19.50...29.50)
8th speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 31.00...37.00
1000S.: (28.00...40.00)
10th speed 1/min: 1700
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...39.40
1000S.: (35.70...40.70)
12th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 25.80...26.20
1000S.: (23.00...29.00)
18th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 32.0...33.0 E
1000S.: (30.0...35.0) E

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm3/: 0.00...3.00
1000S.: -
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.00...8.00
1000S.: (3.00...11.00)
Dispersion cm3/: 3.0
1000S.: (4.0)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...8.00
1000S.: -

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

1st speed 1/min: 1250
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 22.50...23.50
1000S.: (20.50...25.50)

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 40.00...70.00
1000S.: -

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 21.00...31.00
1000S.: -

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 40.00...80.00
1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 2.7...2.9
KF mm: K-OT
MS mm: 1.8
HBA stroke mm: 7.7

Remarks:
:
:
Pump/engine assignment:
Attach timing-device cover KDEP 1151.
Plunger lift in blocking position =
0.30...
0.40 mm referenced to outlet "B".

F = Adjustment point for low full-load delivery
E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).
D = Adjustment point for high full-load delivery

Overflow restriction 0.75 mm - Part No. ..343,..344

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : MAX
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F1300R488
Type number : 0 460 414 095
Customer Part-No. :

Customer-specific information
Customer : MAXION S/A

Engine : S4

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1300
Setting value mm: 2.00...2.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1300
Setting value bar: 7.70...8.30
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 900
Del. quantity cm3/
1000S.: 44.00...45.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 10.50...14.50
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.5
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 1400
Del. quantity cm3/
1000S.: 29.00...35.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 61.00...91.00
mind 1000S.: 61.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1300
TD travel mm: 2.00...2.80
mm: (1.70...3.10)
electromagnet Volt: 12
2nd speed 1/min: 800
TD travel mm: 1.50...1.90
mm: (1.00...2.40)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 600

TD travel mm: 0.40...1.00
mm: (0.00...1.40)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Supply-pump
pressure bar: 7.70...8.30
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 800
Supply-pump
pressure bar: 5.60...6.20
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 600
Supply-pump
pressure bar: 4.60...5.20

Overlow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.00...83.00
quantity cm3/10s: (26.00...98.00)
2nd speed 1/min: 1300
Shutoff
electromagnet Volt: 12
Overflow : 55.00...138.00
quantity cm3/10s: (40.00...153.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 1450
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 18.50...26.50
1000S.: (17.50...27.50)
5th speed 1/min: 1400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 29.00...35.00
1000S.: (27.50...36.50)
9th speed 1/min: 1300
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 43.20...45.80
1000S.: (41.50...47.50)
12th speed 1/min: 900
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 44.00...45.00
1000S.: (42.00...47.00)
18th speed 1/min: 500
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 43.50...46.50
1000S.: (41.50...48.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 10.50...14.50
1000S.: (8.50...16.50)
Dispersion cm3/: 2.5
1000S.: (3.0)
3rd speed 1/min: 325
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 23.00...29.00
1000S.: (22.00...30.00)
4th speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 25.00...41.00
1000S.: (25.00...41.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 61.00...91.00
1000S.: (61.00...91.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.4...1.6

SVS max. mm: 3.6
Ya mm: 34.0...36.0
Yb mm: 43.6...51.6

Remarks:

:

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : MAN
Edition : 12.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F1350R475
Type number : 0 460 416 071
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0826 OH 01

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.55
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
Setting value mm: 3.80...4.20

Supply-pump pressure

Speed 1/min: 800
Setting value bar: 5.00...5.60

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 74.50...75.50
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 7.00...13.00
Del. quantity cm3/: 3.5
1000S.: (3,5)

Full-load speed regulation

Speed 1/min: 1410
Del. quantity cm3/
1000S.: 57.00...63.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...75.00
mind 1000S.: 35.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1350
TD travel mm: 6.10...6.90
mm: (6.10...6.90)
3rd speed 1/min: 600
TD travel mm: 2.20...2.90
mm: (1.80...3.20)
4th speed 1/min: 800
TD travel mm: 3.80...4.20
mm: (3.70...4.70)
5th speed 1/min: 1000
TD travel mm: 4.80...5.60
mm: (4.50...5.90)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 4.20...4.80
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5.80...6.40
3rd speed 1/min: 1350

Supply-pump
pressure bar: 7.00...7.60
4th speed 1/min: 800
Supply-pump
pressure bar: 5.00...5.60
bar: (4.70...5.90)

Overlow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1350
Overflow : 55.60...139.00
quantity cm3/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1550
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1510
Del. quantity cm3/: 0.00...15.00
1000S.: (0.00...15.00)
4th speed 1/min: 1460
Del. quantity cm3/: 15.00...45.00
1000S.: (15.00...45.00)
5th speed 1/min: 1450
Del. quantity cm3/: 15.00...45.00
1000S.: (15.00...45.00)
7th speed 1/min: 1410
Del. quantity cm3/: 57.00...63.00
1000S.: (55.50...64.50)
9th speed 1/min: 800
Del. quantity cm3/: 72.50...76.50
1000S.: (71.00...78.00)
12th speed 1/min: 1000
Del. quyntity cm3/: 74.50...75.50
1000S.: (72.50...77.50)
15th speed 1/min: 600
Del. quantity cm3/: 57.50...63.50
1000S.: (56.50...64.50)
20th speed 1/min: 1350
Del. quantity cm3/: 75.00...78.00
1000S.: (73.50...79.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1350
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm3/: 7.00...13.00
1000S.: (4.50...15.50)

Dispersion cm3/: 3.5
1000S.: (3.5)
2nd speed 1/min: 450
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm3/: 55.00...115.00
1000S.: (55.00...115.00)

2nd speed 1/min: 500
Del. quantity cm3/: 40.00...70.00
1000S.: (40.00...70.00)

3rd speed 1/min: 100
Del. quantity cm3/: 35.00...75.00
1000S.: MIN. 35.00

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.6...6.0
MS1 mm: 1.2...1.4
SVS max. mm: 2.1
Ya mm: 37.4...40.4
Yb mm: 38.8...44.2

Remarks:
Overflow restriction 0.55 mm - Part No. ..303 :

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : PER
Edition : 01.94
replaces : 04.92
Calibrating oil : ISO-4113

Injection pump : VE4/12F1300R346
Type number : 0 460 424 052
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : T4.40 110T

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,0
mm: +-0,02(0,06)
Outlet : C

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.80...2.20
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 5.90...6.50
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 92.00...93.00
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 4.0
1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 78.50...79.50
Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 15.50...19.50
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 5.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1440
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 67.00...73.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 110.00...170.00
mind 1000S.: 110.0
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.10...2.90
mm: (1.80...3.20)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.80...2.20
mm: (1.30...2.70)
Shutoff
electromagnet Volt: 24
4th speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 0.20...1.00
mm: (0.00...1.20)
Shutoff
electromagnet Volt: 24
5th speed 1/min: 1300
Charge press. hPa: 1000
TD travel mm: 2.20...3.00
mm: (1.90...3.30)
Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.00...7.60
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.90...6.50
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 500
Supply-pump
pressure bar: 3.80...4.40
Shutoff
electromagnet Volt: 24

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 7.0
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 84.50...85.50
1000S.: (82.00...88.00)
2nd speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 20.00...28.00
1000S.: (17.00...31.00)
3rd speed 1/min: 1580
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: -
5th speed 1/min: 1440
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 67.00...73.00
1000S.: (64.00...76.00)
9th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 90.50...93.50
1000S.: (88.50...95.50)
10th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 93.00...96.00
1000S.: (91.00...98.00)
12th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quyntity cm3/: 92.00...93.00
1000S.: (89.50...95.50)
18th speed 1/min: 700
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 78.50...79.50
1000S.: (76.00...82.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 15.50...19.50
1000S.: (12.50...22.50)
Dispersion cm3/: 5.0
1000S.: (5.0)
2nd speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 4.50...10.50
1000S.: (2.50...12.50)
4th speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 110.00...170.00
1000S.: (110.00...170.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 65.00...75.00
1000S.: (65.00...75.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 110.00...170.00
1000S.: (110.00...170.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation		
K	mm:	3,2...3,4
KF	mm:	K-0T
MS	mm:	0,6...1,0
SVS max.	mm:	1,8
XK	mm:	18.2...22.0
XL	mm:	13,8...17,2
Ya	mm:	28.2...32.2
Yb	mm:	52.9...61.1

Remarks:
:
:
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : PER
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1300R346
Type number : 0 460 424 052
Customer Part-No. : 2463 HO 68

Customer-specific information
Customer : PERKINS

Engine : T4.40 110T

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,0
mm: +-0,02(0,06)
Outlet : C

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.80...2.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 5.90...6.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 92.00...93.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 78.50...79.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 15.50...19.50
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1440
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 67.00...73.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 110.00...170.00
mind 1000S.: 110.0
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.10...2.90
mm: (1.80...3.20)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.80...2.20
mm: (1.30...2.70)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 0.20...1.00
mm: (0.00...1.20)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1300
Charge press. hPa: 1000
TD travel mm: 2.20...3.00
mm: (1.90...3.30)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.00...7.60
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.90...6.50
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Supply-pump
pressure bar: 3.80...4.40
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 7.0
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 84.50...85.50
1000S.: (82.00...88.00)
2nd speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 20.00...28.00
1000S.: (17.00...31.00)
3rd speed 1/min: 1580
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: -
5th speed 1/min: 1440
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 67.00...73.00
1000S.: (64.00...76.00)
9th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 90.50...93.50
1000S.: (88.50...95.50)
10th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 93.00...96.00
1000S.: (91.00...98.00)
12th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 92.00...93.00
1000S.: (89.50...95.50)
18th speed 1/min: 700
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 78.50...79.50
1000S.: (76.00...82.00)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 300
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.50...19.50
1000S.: (12.50...22.50)
Dispersion cm3/: 5.0
1000S.: (5.0)
2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 4.50...10.50
1000S.: (2.50...12.50)
4th speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 110.00...170.00
1000S.: (110.00...170.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 65.00...75.00
1000S.: (65.00...75.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 110.00...170.00
1000S.: (110.00...170.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3,2...3,4
KF	mm: K-0T
MS	mm: 0,6...1,0
SVS max.	mm: 1,8
XK	mm: 18.2...22.0
XL	mm: 13,8...17,2
Ya	mm: 28.2...32.2
Yb	mm: 52.9...61.1

Remarks:

:
:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : CUM
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R378-5
Type number : 0 460 424 069
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BT 390 IND.

Power KW: 64
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900

Setting value mm: 2.00...2.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.60...5.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1100
Del. quantity cm3/
1000S.: 60.50...61.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 335
Del. quantity cm3/
1000S.: 9.00...11.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1310
Del. quantity cm3/
1000S.: 42.00...48.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 45.00...95.00
mind 1000S.: 45.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 2.90...3.70
mm: (2.60...4.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900
TD travel mm: 2.00...2.40
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
TD travel mm: 0.90...1.70
mm: (0.60...2.00)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2.70...3.30
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 900
Supply-pump
pressure bar: 4.60...5.20
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Supply-pump
pressure bar: 5.40...6.00
Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
Supply-pump
pressure bar: 3.90...4.50
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1430
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...15.00
1000S.: (0.00...15.00)
4th speed 1/min: 1340
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...55.00
1000S.: (15.00...55.00)
5th speed 1/min: 1310
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 42.00...48.00
1000S.: (39.00...51.00)
9th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 59.00...62.00
1000S.: (57.50...63.50)
11th speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 60.50...64.50
1000S.: (58.50...66.50)
12th speed 1/min: 1100
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 60.50...61.50
1000S.: (58.00...64.00)
20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 56.00...66.00
1000S.: (55.00...67.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 335
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 335
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 9.00...11.00
1000S.: (5.00...15.00)
Dispersion cm3/: 5.5
1000S.: (7.0)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 45.00...95.00
1000S.: (45.00...95.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 30.00...70.00
1000S.: (30.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 45.00...95.00
1000S.: (45.00...95.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 0.9...1.1
Ya mm: 34.8...38.8
Yb mm: 41.0...46.6

Remarks:
: C.D.C # 391 7521
Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : PER
Edition : 01.94
replaces : --
Calibrating oil : ISO-4113

Injection pump : VE4/12F1300R346-1
Type number : 0 460 424 090
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : PHASER 110T

Power KW: 80

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,0
mm: +-0,02(0,06)
Outlet : C

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 2.20...2.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 5.90...6.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 89.50...90.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 70.50...71.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 16.50...20.50
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1440
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 64.00...70.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 95.00...155.00
mind 1000S.: 95.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.20...2.60
mm: (1.70...3.10)
electromagnet Volt: 12
2nd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 0.70...1.70
mm: (0.60...1.80)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.00...7.60
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.90...6.50
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Supply-pump
pressure bar: 3.80...4.40
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*

Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 4.5
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 70.50...71.50
1000S.: (68.00...74.00)
2nd speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 18.00...30.00
1000S.: (14.00...34.00)
3rd speed 1/min: 1580
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 1440
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 64.00...70.00
1000S.: (61.00...73.00)
9th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 88.00...91.00
1000S.: (86.00...93.00)
10th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 91.00...94.00
1000S.: (89.00...96.00)
12th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 89.50...90.50
1000S.: (87.00...93.00)
18th speed 1/min: 700
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 63.50...64.50
1000S.: (61.00...67.00)
19th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 61.50...64.50
1000S.: (59.50...66.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1300

Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 16.50...20.50
1000S.: (13.50...23.50)
Dispersion cm3/: 5.0
1000S.: (5.0)
2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.00...9.00
1000S.: (1.00...11.00)
4th speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 95.00...155.00
1000S.: (95.00...155.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 40.00...60.00
1000S.: (40.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 95.00...155.00
1000S.: (95.00...155.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

E01

Mounting and assembly dimensions:

Designation		
K	mm:	3.2...3.4
KF	mm:	K-OT
MS1	mm:	1.41-1.67
SVS max.	mm:	1.1
Ya	mm:	29.2...31.2
Yb	mm:	51.9...60.1

Remarks:

Operate control lever after each ESA manifold-pressure compensator pressure change.

* Correction at adjusting nut

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : NIS
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1400R539
Type number : 0 460 424 099
Customer Part-No. :

Customer-specific information
Customer : NISSAN-MISA

Engine : B 4.40 II

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 54.00...56.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 0.3
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Setting value mm: 1.80...2.00

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Setting value bar: 6.90...7.50
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 69.50...70.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (5.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 13.00...17.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1575
Del. quantity cm3/
1000S.: 52.00...56.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 95.00...155.00
mind 1000S.: 95.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300
TD travel mm: 3.20...3.80
mm: (2.70...4.30)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
TD travel mm: 1.80...2.00
mm: (1.20...2.60)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
TD travel mm: 0.70...1.30
mm: (0.20...1.80)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1400
TD travel mm: 3.80...4.40
mm: (3.30...4.90)
Shutoff
electromagnet Volt: 12
8th speed 1/min: 850
TD travel mm: 0.70...2.70
mm: (0.20...2.20)
KSB/AFB
valve Volt: !12!
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1400
Supply-pump
pressure bar: 8.10...8.70
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1100
Supply-pump
pressure bar: 6.90...7.50
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Supply-pump
pressure bar: 4.20...4.80
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000

Overlow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.18
quantity cm3/10s: (26.70...98.18)
2nd speed 1/min: 1400
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1700
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 1575
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 52.00...56.00
1000S.: (48.00...60.00)
8th speed 1/min: 1525
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 60.00...80.00
1000S.: (60.00...80.00)
9th speed 1/min: 1400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 73.50...78.50
1000S.: (72.00...80.00)
10th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 73.00...78.00
1000S.: (71.50...79.50)
12th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 69.50...70.50
1000S.: (66.50...73.50)
18th speed 1/min: 840
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 73.50...74.50
1000S.: (70.50...77.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1400
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 13.00...17.00
1000S.: (9.00...21.00)
Dispersion cm3/: 5.0
1000S.: (5.0)
2nd speed 1/min: 430
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 95.00...155.00
1000S.: (95.00...155.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 50.00...90.00
1000S.: (50.00...90.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 95.00...155.00
1000S.: (95.00...155.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8
KF mm: KOT
MS mm: 0.9...1.3
Ya mm: 37.2...39.2
Yb mm: 52.7...60.7

Remarks:
:
Pump with slave plunger

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : MAN
Edition : 12.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1200R572
Type number : 0 460 424 104
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0824 LFL 01

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 110

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Indicator setting
Piston stroke mm: 1.0
Outlet : C

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1200
Setting value mm: 2.40...2.80
AFB/AFB
valve Volt: 12

Supply-pump pressure

Speed 1/min: 850
Charge press hPa: 1200
Setting value bar: 6.40...7.00
KSB/AFB
valve Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1200
Del. quantity cm3/
1000S.: 107.50...108.50
KSB/AFB
valve Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
1000S.: 60.50...61.50
KSB/AFB
valve Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 8.00...12.00
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1300
Charge press hPa: 1200
Del. quantity cm3/
1000S.: 67.00...73.00
KSB/AFB
valve Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 100.0...160.0 V
mind 1000S.: 100.0
KSB/AFB
Valve Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 950
Charge press hPa: 1200
TD travel mm: 3.40...4.20
mm: (3.10...4.50)
KSB/AFB
valve Volt: 12
3rd speed 1/min: 850
Charge press hPa: 1200
TD travel mm: 2.40...2.80
mm: (1.90...3.30)
KSB/AFB
valve Volt: 12
4th speed 1/min: 750
Charge press hPa: 1200
TD travel mm: 1.00...1.80
mm: (0.70...2.10)
KSB/AFB
valve Volt: 12
5th speed 1/min: 1200
Charge press. hPa: 1200
TD travel mm: 4.40...5.20
mm: (4.40...5.20)
KSB/AFB
valve Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 550
Charge press. hPa: 1200
Supply-pump
pressure bar: 4.90...5.50
KSB/AFB
valve Volt: 12
2nd speed 1/min: 850
Charge press. hPa: 1200
Supply-pump
pressure bar: 6.40...7.00
KSB/AFB
valve Volt: 12
3rd speed 1/min: 1200
Charge press. hPa: 1200
Supply-pump
pressure bar: 8.10...8.70
KSB/AFB
valve Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 550
Charge press. hPa: -
KSB/AFB
valve Volt: 12
Overflow : 41.70...86.18
quantity cm3/10s: (26.70...98.18)
2nd speed 1/min: 1200
Charge press. hPa: 1200
KSB/AFB
valve Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 550*
Charge-air pressure-setting
point hPa: 400
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 83.50...84.50
1000S.: (81.50...86.50)
2nd speed 1/min: 1450
Charge press. hPa: 1200
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1400
Charge press. hPa: 1200
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 0.00...15.00
1000S.: (0.00...15.00)
5th speed 1/min: 1300
Charge press. hPa: 1200
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 67.00...73.00
1000S.: (61.50...78.50)
8th speed 1/min: 1350
Charge press. hPa: 1200
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 15.00...55.00
1000S.: (15.00...55.00)
9th speed 1/min: 700
Charge press. hPa: 1200
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 110.00...115.00
1000S.: (108.50...116.50)
12th speed 1/min: 1200
Charge press. hPa: 1200
KSB/AFB
valve Volt: 12
Del. quyntity cm3/: 101.00...105.00
1000S.: (99.50...107.50)
14th speed 1/min: 1000
Charge press. hPa: 1200
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 107.50...108.50
1000S.: 105.50...110.50
15th speed 1/min: 850
Charge press. hPa: 1200

KSB/AFB
valve Volt: 12
Del. quantity cm3/: 111.50...116.50
1000S.: (110.00...118.00)
18th speed 1/min: 550
Charge press. hPa: -
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 60.50...61.50
1000S.: (58.00...64.00)
20th speed 1/min: 550
Charge press. hPa: 1200
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 109.50...118.50
1000S.: (108.00...120.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1200
Charge press. hPa: 1200
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
KSB/AFB
valve Volt: 12

Idle delivery:

1st speed 1/min: 400
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 8.00...12.00
1000S.: (5.00...15.00)
Dispersion cm3/: 6.0
1000S.: (6.5)
2nd speed 1/min: 500
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 270
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 80.0...110.0 V
1000S.: (80.00...110.00)

2nd speed 1/min: 370
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 50.00...90.00 V
1000S.: (50.00...90.00)

3rd speed 1/min: 100
KSB/AFB
valve Volt: 12

Del. quantity cm3/: 44.00...46.00 L
1000S.: (37.00...53.00)

4th speed 1/min: 100
KSB/AFB
valve Volt: 12
Del. quantity cm3/: 100.0...160.0 V
1000S.: (100.00...160.00)

Mounting and assembly dimensions:

Designation		
K	mm:	3.6...3.8
KF	mm:	KOT
MS	mm:	-
MS1	mm:	1.0...1.2
Ya	mm:	37.4...40.4
Yb	mm:	36.9...42.1

Remarks:
:
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Overflow restriction 0.55 mm - Part No. ..303

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Starting delivery check
V = Speed-control lever in full-load position

Starting delivery check
L = Speed-control lever in idle position

Pump with slave plunger

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : MAN
Edition : 12.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R120-6
Type number : 0 460 426 098
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0226 MCE 51

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 700
Charge press. hPa: 1000
Setting value mm: 2.90...3.30
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 700
Charge press hPa: 1000
Setting value bar: 4.40...5.00
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 105.50...106.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 76.50...77.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 10.00...16.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.5
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1180
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 77.00...83.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 80.00...120.00
mind 1000S.: 80.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 900
Charge press hPa: 1000

TD travel mm: 3.70...4.50
mm: (3.40...4.80)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 700
Charge press hPa: 1000
TD travel mm: 2.90...3.30
mm: (2.40...3.80)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 1.30...2.10
mm: (1.00...2.40)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1100
Charge press. hPa: 1000
TD travel mm: 3.70...4.50
mm: (3.40...4.80)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.60...4.20
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 700
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.40...5.00
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.20...5.80
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.90...6.50
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.00...83.00
quantity cm3/10s: (26.00...98.00)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.00...139.00
quantity cm3/10s: (40.00...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 500*
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 5.0
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 90.50...91.50
1000S.: (88.50...93.50)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1230
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...45.00
1000S.: (15.00...45.00)
4th speed 1/min: 1270
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...15.00
1000S.: (0.00...15.00)
5th speed 1/min: 1180
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 77.00...83.00
1000S.: (75.50...84.50)
9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 101.50...106.50
1000S.: (100.00...108.00)
10th speed 1/min: 900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 102.50...107.50
1000S.: (101.00...109.00)
12th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 105.50...106.50
1000S.: (103.50...108.50)
18th speed 1/min: 500
Charge press. hPa: -

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 76.50...77.50
1000S.: (74.50...79.50)
20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 97.50...102.50
1000S.: (96.00...104.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 300
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 10.00...16.00
1000S.: (8.00...18.00)
Dispersion cm3/: 3.5
1000S.: (4.0)
2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...5.00
1000S.: (0.00...5.00)

Automatic starting fuel delivery:

1st speed 1/min: 320
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 90.00...130.00
1000S.: (90.00...130.00)

2nd speed 1/min: 420
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 50.00...90.00
1000S.: (50.00...90.00)

4th speed 1/min: 100

E11

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 80.00...120.00
1000S.: (80.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation		
K	mm:	-
KF	mm:	5.6...6.0
MS	mm:	0.9...1.3
SVS max.	mm:	2.4
LDA stroke	mm:	5.0
Ya	mm:	37.4...40.4
Yb	mm:	47.8...53.2

Remarks:
: MAN 51.11102-7474
:
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Overflow restriction 0.55 mm - Part No. ..303

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : MAN
Edition : 12.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R307-5
Type number : 0 460 426 203
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0826 TE 101

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 110

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 2.10...2.50

Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 8.10...8.70
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 96.00...97.00
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 61.50...62.50
Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 6.50...13.50
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1230
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 69.00...75.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...100.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 24

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 1000
Inj.-qty. cm3/
difference 1000S.: -(11.0...19.0)#
Shutoff
electromagnet Volt: 24
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1000
Charge press hPa: 1000
TD-travel
difference mm: -(0.4...0.6)#
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.60...3.40
mm: (2.30...3.70)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.10...2.50
mm: (1.60...3.00)
Shutoff
electromagnet Volt: 24
4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 1.00...1.80
mm: (0.70...2.10)
Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.10...5.70
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.10...8.70
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.70...9.30
Shutoff
electromagnet Volt: 24

Overlow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 500*
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 7.5
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 79.50...80.50
1000S.: (77.50...82.50)
2nd speed 1/min: 1400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1350
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...15.00
1000S.: (0.00...15.00)
4th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 15.00...55.00
1000S.: (15.00...55.00)
5th speed 1/min: 1230
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 69.00...75.00
1000S.: (67.50...76.50)
9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 92.50...97.50
1000S.: (91.00...99.00)
12th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24

Del. quyntity cm3/: 96.00...97.00
1000S.: (94..00...99.00)
15th speed 1/min: 800
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 94.50...99.50
1000S.: (93.00...101.00)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 61.50...62.50
1000S.: (59.50...64.50)
20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 95.00...104.00
1000S.: (93.50...105.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 6.50...13.50
1000S.: (4.50...15.50)
Dispersion cm3/: 6.0
1000S.: (6.5)
2nd speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

2nd speed 1/min: 1000
Charge press. hPa: 1000

Inj.-qty. cm3/: -11...-13.0 '
difference 1000S.: (-11.0...-13.0)
Shutoff
electromagnet Volt: 24
4th speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm3/: -11...-19.0 #
difference 1000S.: (-11.0...-19.0)
Shutoff
electromagnet Volt: 24
5th speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm3/: 2.0...8.0 " Z
difference 1000S.: (2.00...8.00) Z
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : -0.4...-0.6 #
difference mm: (-0.40...-0.60)
Shutoff
electromagnet Volt: 24
4th speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : 0.20...-1.80"
difference mm: (0.20...-1.80)
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply pump-
pressure : -0.1...-0.3 '
difference bar: (-0.10...-0.30)
Shutoff
electromagnet Volt: 24

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 80.00...120.00
1000S.: (80.00...120.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 50.00...90.00
1000S.: (50.00...90.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 60.00...100.00
1000S.: (60.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation	
K	mm: –
KF	mm: K0T
MS1	mm: 1.388
SVS max.	mm: 2.8
LDA stroke	mm: 7.5
Ya	mm: 37.4...40.4
Yb	mm: 39.9...45.1

Remarks:
Operate control lever after each -7178 manifold-pressure compensator pressure change.

* Correction at adjusting nut

Overflow restriction 0.55 mm - Part No. ..303

Z = Absolute delivery

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : FIA
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R497
Type number : 0 460 426 210
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8060.45.4610

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 54.00...56.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 2.30...2.70
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 6.20...6.80
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 72.00...73.00
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 3.5
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 42.50...43.50
Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 7.00...11.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 4.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1400
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 31.00...37.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...90.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.30...2.70
mm: (1.90...3.70)
Shutoff
electromagnet Volt: 24
4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 1.00...1.80
mm: (0.80...2.60)
Shutoff
electromagnet Volt: 24
5th speed 1/min: 1250
Charge press. hPa: 1000
TD travel mm: 3.70...4.50
mm: (3.20...5.00)
Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.00...4.60
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.20...6.80
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.60...8.20
Shutoff
electromagnet Volt: 24

Overlow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 97.00...141.00
quantity cm3/10s: (97.00...141.00)
2nd speed 1/min: 1200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 115.00...184.00
quantity cm3/10s: (115.00...184.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600*
Charge-air pressure-setting
point hPa: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 63.00...64.00
1000S.: (59.50...67.50)
2nd speed 1/min: 1550
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 1400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 31.00...37.00
1000S.: (28.00...40.00)
8th speed 1/min: 1325
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 44.00...60.00
1000S.: (44.00...60.00)
9th speed 1/min: 1200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 66.00...69.00
1000S.: (64.00...71.00)
10th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 69.00...73.00
1000S.: (67.50...74.50)
12th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quyntity cm3/: 72.50...73.50
1000S.: (69.50...76.50)
18th speed 1/min: 600
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 43.00...44.00
1000S.: (40.00...47.00)
20th speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 73.50...78.50
1000S.: (71.50...80.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 7.00...11.00
1000S.: (4.00...14.00)
Dispersion cm3/: 4.0
1000S.: (5.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 45.00...95.00
1000S.: (45.00...95.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 20.00...50.00
1000S.: (20.00...50.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 40.00...90.00
1000S.: (40.00...90.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

E18

K mm: 3.6...3.8
KF mm: KOT
MS mm: 0.1...0.3
Ya mm: 37.9...39.9
Yb mm: 34.8...40.2

Remarks:

:
:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : CDC
Edition : 01.94
replaces : 03.93
Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R498
Type number : 0 460 426 211
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6 BTAA 5.9B

Power KW: 118
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,4
mm: +-0,02(0,06)
Outlet : D

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.50...1.90
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 6.30...6.90
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 84.00...85.00
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 69.50...70.50
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 5.0
1000S.: (6.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 6.00...10.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1380
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 57.50...63.50
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 75.00...105.00
mind 1000S.: 75.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.30...3.10
mm: (2.00...3.40)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.50...1.90
mm: (1.00...2.40)
Shutoff
electromagnet Volt: 24
7.Rotacao 1/min: 850
Charge press. hPa: 1000
TD travel mm: 0.00...1.40
mm: -
Shutoff
electromagnet Volt: 24
8th speed 1/min: 450
Charge press. hPa: -
TD travel mm: 2.00...3.00
mm: (1.80...3.40)
KSB/AFB
valve Volt: 24
Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 350
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.90...6.50
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.30...6.90
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.30...7.90
Shutoff
electromagnet Volt: 24
4th speed 1/min: 500
Charge press. hPa: 1000

E20

Supply-pump
pressure bar: 3.90...4.50
Shutoff
electromagnet Volt: 24

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600*
Charge-air pressure-setting
point hPa: 450
LDA-stroke mm: 6.5
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 76.00...77.00
1000S.: (72.50...80.50)
2nd speed 1/min: 1485
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1465
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 10.00...30.00
1000S.: (10.00...30.00)
5th speed 1/min: 1380
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 57.50...63.50
1000S.: (54.50...66.50)
9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 82.00...85.00
1000S.: (80.50...86.50)
10th speed 1/min: 1200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24

Del. quantity cm3/: 83.50...86.50
1000S.: (81.50...88.50)
12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quyntity cm3/: 84.00...85.00
1000S.: (81.50...87.50)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 69.50...70.50
1000S.: (66.00...74.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 6.00...10.00
1000S.: (3.00...13.00)
Dispersion cm3/: 5.5
1000S.: (7.0)
2nd speed 1/min: 410
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 80.00...120.00
1000S.: (80.00...120.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 24

Del. quantity cm3/: 60.00...90.00
1000S.: (60.00...90.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 75.00...105.00
1000S.: (75.00...105.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation		
K	mm:	3.6...3.8
KF	mm:	K-0T
MS1	mm:	1.19-1.44
SVS max.	mm:	3.7
LDA stroke	mm:	6.2
Ya	mm:	34.8...38.8
Yb	mm:	43.6...49.2

Remarks:
: C.D.C # 328 1781
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : CUM
Edition : 01.94
replaces : 03.93
Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R498-2
Type number : 0 460 426 213
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6 BTA 5.9B

Power KW: 106
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1.20
mm: +-0.02(0.06)
Outlet : D

Injection-pump setting values

E22

Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.90...2.30
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 6.30...6.90
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 82.50...83.50
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 67.00...68.00
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 5.0
1000S.: (6.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 11.00...15.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1350
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 55.00...61.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 65.00...95.00
mind 1000S.: 65.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.40...3.20
mm: (2.10...3.50)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.90...2.30
mm: (1.40...2.80)
Shutoff
electromagnet Volt: 24
4th speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 0.60...1.40
mm: (0.30...1.70)
Shutoff
electromagnet Volt: 24
8th speed 1/min: 450
Charge press. hPa: -
TD travel mm: 2.00...3.00
mm: (1,80...3.20)
KSB/AFB
valve Volt: 24
Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 850
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.70...6.30
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.30...6.90
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.20...7.80
Shutoff
electromagnet Volt: 24
4th speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.90...4.50
Shutoff
electromagnet Volt: 24

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600*
Charge-air pressure-setting
point hPa: 450
LDA-stroke mm: 4.0
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 73.00...74.00
1000S.: (69.50...77.50)
2nd speed 1/min: 1460
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1425
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 15.00...45.00
1000S.: (15.00...45.00)
5th speed 1/min: 1350
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 55.00...61.00
1000S.: (52.00...64.00)
9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 77.00...81.00
1000S.: (76.00...82.00)
10th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24

Del. quantity cm3/: 80.00...83.00
1000S.: (78.00...85.00)
12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quyntity cm3/: 82.50...83.50
1000S.: (80.00...86.00)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 67.00...68.00
1000S.: (63.00...71.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 11.00...15.00
1000S.: (8.00...18.00)
Dispersion cm3/: 5.5
1000S.: (7.0)
2nd speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 75.00...115.00
1000S.: (75.00...115.00)

2nd speed 1/min: 200
Shutoff
electromagnet Volt: 24

Del. quantity cm3/: 60.00...90.00
1000S.: (60.00...90.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 65.00...95.00
1000S.: (65.00...95.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation		
K	mm:	3.6...3.8
KF	mm:	K-0T
MS1	mm:	1.3...1.5
SVS max.	mm:	3.7
LDA stroke	mm:	4,0
Ya	mm:	34.8...38.8
Yb	mm:	44.9...50.1

Remarks:
: C.D.C. # 328 1849
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : NIS
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1400R541
Type number : 0 460 426 221
Customer Part-No. :

Customer-specific information
Customer : NISSAN-MISA

Engine : B 6.60 T II

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 54.00...56.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Charge press. hPa: 1500
Setting value mm: 2.10...2.30
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1200
Charge press hPa: 1500
Setting value bar: 7.40...8.00
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 840
Charge press. hPa: 1500
Del. quantity cm3/
1000S.: 79.50...80.50
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 60.50...61.50
Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 13.00...17.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 5.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1600
Charge press hPa: 1500
Del. quantity cm3/
1000S.: 40.00...44.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 100.00...160.00
mind 1000S.: 100.0
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1400
Charge press hPa: 1500
TD travel mm: 3.40...4.00
mm: (3.00...4.40)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1200
Charge press hPa: 1500
TD travel mm: 2.10...2.30
mm: (1.70...2.70)
Shutoff
electromagnet Volt: 24
4th speed 1/min: 1100
Charge press hPa: 1500
TD travel mm: 0.90...1.50
mm: (0.50...1.90)
Shutoff
electromagnet Volt: 24
8th speed 1/min: 1000
Charge press. hPa: 1500
TD travel mm: 1.10...2.70
mm: (0.90...2.90)
KSB/AFB
valve Volt: 24
Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 1400
Charge press. hPa: 1500
Supply-pump
pressure bar: 8.20...8.80
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1200
Charge press. hPa: 1500
Supply-pump
pressure bar: 7.40...8.00
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 600
Charge press. hPa: 1500
Supply-pump
pressure bar: 3.80...4.40
Shutoff
electromagnet Volt: 24

Overlow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Overflow : 41.00...83.00
quantity cm3/10s: (26.00...98.00)
2nd speed 1/min: 1250
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Overflow : 55.00...138.00
quantity cm3/10s: (40.00...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
Charge-air pressure-setting
point hPa: 650
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 73.50...74.50
1000S.: (70.00...78.00)
2nd speed 1/min: 1725
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 1600
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 40.00...44.00
1000S.: (36.00...48.00)
8th speed 1/min: 1400
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 71.00...79.00
1000S.: (70.00...80.00)
9th speed 1/min: 1250
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 79.00...83.00
1000S.: (77.50...84.50)
12th speed 1/min: 840
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Del. quyntity cm3/: 79.50...80.50
1000S.: (77.00...83.00)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 60.50...61.50
1000S.: (58.00...64.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Charge press. hPa: 1500
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 13.00...17.00
1000S.: (10.00...20.00)
Dispersion cm3/: 5.0
1000S.: (5.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 110.00...170.00
1000S.: (100.00...160.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 55.00...85.00
1000S.: (55.00...85.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 100.00...160.00
1000S.: (100.00...160.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8
KF mm: KOT
MS1 mm: 1.05-1.30
Ya mm: 37.9...39.9

E27

Yb mm: 47.8...56.2

Remarks:
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : MAN
Edition : 01.94
replaces : 09.93
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R543
Type number : 0 460 426 222
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0826 LE 521

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 683 901 110

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Charge press. hPa: 1000
Setting value mm: 1.80...2.20

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Charge press hPa: 1000
Setting value bar: 6.90...7.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 105.50...106.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 62.50...63.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 7.50...13.50
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1250
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 53.00...57.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 80.00...140.00
mind 1000S.: -
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 900
Charge press hPa: 1000
Inj.-qty. cm3/
difference 1000S.: - 19.0..21.0 #
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 900
Charge press hPa: 1000
Supply pump
pressure
difference bar: - 0.1...0.3 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 0.50...1.30
mm: (0.20...1.40)
electromagnet Volt: 12
2nd speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 1.80...2.20
mm: (1.30...2.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.00...2.80
mm: (1.70...3.10)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.60...5.20
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.90...7.50
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.00...8.60
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 500*
Charge-air pressure-setting
point hPa: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 91.50...92.50
1000S.: (88.00...96.00)
2nd speed 1/min: 1350
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: -
3rd speed 1/min: 1320
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: ... 15.0
1000S.: -
4th speed 1/min: 1270
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...55.00
1000S.: -
5th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 53.00...57.00
1000S.: (46.50...63.50)
6th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 94.50...99.50
1000S.: (93.00...101.00)
7th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 97.00...102.00
1000S.: (95.50...103.50)
8th speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 106.00...111.00
1000S.: (104.50...112.50)
9th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 109.00...121.00
1000S.: (108.50...120.50)
KSB/AFB
valve Volt: 500
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 62.50...63.50
1000S.: (60.00...66.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: -
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 300
Charge press. hPa: -
Del. quantity cm3/: 0.0...3.0
1000S.: -
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.50...13.50
1000S.: (4.50...15.50)
Dispersion cm3/: 6.0
1000S.: (6.5)
2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: -

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 900

Charge press. hPa: 1000
Inj.-qty. cm3/ : - 10.0..40.0"
difference 1000S.: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 900
Charge press. hPa: 1000
Inj.-qty. cm3/: "Z" 2.0..8.0'
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 900
Charge press. hPa: 1000
TD-travel : - 0.9...1.1 "
difference mm: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 900
Charge press. hPa: 1000
TD-travel : - 0.0...2.0'
difference mm: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 90.0...130.0
1000S.: -

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 30.0...90.0
1000S.: -

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 80.0...140.0
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: K-0T
MS1 mm: 1.0...1.3
Ya mm: 37.4...40.4

Yb mm: 43.4...48.6

Remarks:
Operate control lever after each 3-7177 manifold-pressure compensator pressure change.

* Correction at adjusting nut

Z = Absolute delivery

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : SNF
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1200R551
Type number : 0 460 426 225
Customer Part No. :

Customer-specific information
Customer : SNF

Engine : WD 612.42

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 110

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Setting value mm: 2.00...2.40

Supply-pump pressure

Speed 1/min: 850
Setting value bar: 7.30...7.90

Full-load del. w/out charge press.:

Speed 1/min: 800
Del. quantity cm3/
1000S.: 65.50...66.50
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 8.00...12.00
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1290
Del. quantity cm3/
1000S.: 47.00...53.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...110.00
mind 1000S.: 70.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 950
TD travel mm: 2.90...3.70
mm: (2.60...4.00)
3rd speed 1/min: 850
TD travel mm: 2.00...2.40
mm: (1.50...2.90)
4th speed 1/min: 750
TD travel mm: 0.60...1.40
mm: (0.30...1.70)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 5.50...6.10
2nd speed 1/min: 850
Supply-pump
pressure bar: 7.30...7.90
3rd speed 1/min: 1200
Supply-pump
pressure bar: 9.00...9.60

Overlow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1200
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1400
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1350
Del. quantity cm3/: 0.00...15.00
1000S.: (0.00...15.00)
4th speed 1/min: 1300
Del. quantity cm3/: 15.00...65.00
1000S.: (15.00...65.00)
5th speed 1/min: 1290
Del. quantity cm3/: 47.00...53.00
1000S.: (41.50...58.50)
9th speed 1/min: 1200
Del. quantity cm3/: 63.80...68.80
1000S.: (62.30...70.30)
10th speed 1/min: 1000
Del. quantity cm3/: 66.00...71.00
1000S.: (64.50...72.50)
12th speed 1/min: 800
Del. quyntity cm3/: 65.50...66.50
1000S.: (63.00....68.50)
20th speed 1/min: 600
Del. quantity cm3/: 60.50...69.50
1000S.: (59.00...71.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1200
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm3/: 8.00...12.00
1000S.: (13.50...26.50)
Dispersion cm3/: 6.0
1000S.: (6.5)
2nd speed 1/min: 400
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 330
Del. quantity cm3/: 70.00...100.00
1000S.: (70.00...100.00)

2nd speed 1/min: 430
Del. quantity cm3/: 50.00...80.00
1000S.: (50.00...80.00)

4th speed 1/min: 100
Del. quantity cm3/: 70.00...110.00
1000S.: (70.00...110.00)

Mounting and assembly dimensions:

Designation		
K	mm:	-
KF	mm:	KOT
MS	mm:	0.9...1.3
Ya	mm:	36.2...40.2
Yb	mm:	51.0...59.0

Remarks:
:
:
Pump with slave plunger

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : FIA
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1350R552
Type number : 0 460 426 226
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8060.45.4380

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 54.00...56.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 2.90...3.10
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 8.00...8.60
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 66.00...67.00
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 3.5
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 48.50...49.50
Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 10.00...14.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 4.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1475
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 39.00...45.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...110.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200
Charge press hPa: 1000
TD travel mm: 4.00...4.60

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.90...3.10
mm: (2.30...3.70)
Shutoff
electromagnet Volt: 24
4th speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.50...2.10
mm: (1.10...2.50)
Shutoff
electromagnet Volt: 24
5th speed 1/min: 1350
Charge press. hPa: 1000
TD travel mm: 4.60...5.20
mm: (4.20...5.60)
Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.20...5.80
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.00...8.60
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1350
Charge press. hPa: 1000
Supply-pump
pressure bar: 9.60...10.20
Shutoff
electromagnet Volt: 24

Overlow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 97.50...141.90
quantity cm3/10s: (97.50...141.90)
2nd speed 1/min: 1350
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 115.30...184.70
quantity cm3/10s: (115.30...184.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 500*
Charge-air pressure-setting
point hPa: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 63.50...64.50
1000S.: (60.00...68.00)
2nd speed 1/min: 1550
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 1475
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 39.00...45.00
1000S.: (34.00...50.00)
8th speed 1/min: 1450
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 45.00...61.00
1000S.: (43.00...63.00)
9th speed 1/min: 1350
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 56.50...59.50
1000S.: (54.50...61.50)
10th speed 1/min: 1200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 59.00...63.00
1000S.: (57.50...64.50)
12th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quyntity cm3/: 66.00...67.00
1000S.: (63.00...70.00)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 48.50...49.50
1000S.: (45.50...52.50)
20th speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 68.00...72.00
1000S.: (66.50...73.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1350

Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 10.00...14.00
1000S.: (7.00...17.00)
Dispersion cm3/: 4.0
1000S.: (5.0)
2nd speed 1/min: 425
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...6.00
1000S.: (0.00...8.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 60.00...110.00
1000S.: (60.00...110.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 25.00...55.00
1000S.: (25.00...55.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 60.00...110.00
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

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Mounting and assembly dimensions:

Designation	
K	mm: 3.5...3.7
KF	mm: KOT
MS1	mm: 1.4-1.65
Ya	mm: 37.9...39.9
Yb	mm: 40.9...46.1

Remarks:

:
:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : PER
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R556
Type number : 0 460 426 228
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : 929 Phaser 210Ti

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : C

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1500
Setting value mm: 1.60...1.80
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1500
Setting value bar: 7.50...8.10
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 900
Charge press. hPa: 1500
Del. quantity cm3/
1000S.: 93.50...94.50
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 56.00...57.00
Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 280
Del. quantity cm3/
1000S.: 9.00...13.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 6.5
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1400
Charge press hPa: 1500
Del. quantity cm3/
1000S.: 42.00...48.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 100.00...160.00
mind 1000S.: 100.0
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1500
TD travel mm: 1.60...1.80
mm: (1.10...2.30)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
Charge press hPa: 1500
TD travel mm: 0.70...1.30
mm: (0.30...1.70)
Shutoff
electromagnet Volt: 24
4th speed 1/min: 1200
Charge press hPa: 1500
TD travel mm: 2.20...2.80
mm: (1.80...3.20)
Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 1250
Charge press. hPa: 1500
Supply-pump
pressure bar: 8.20...8.80
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1100
Charge press. hPa: 1500
Supply-pump
pressure bar: 7.50...8.10
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 700
Charge press. hPa: 1500
Supply-pump
pressure bar: 6.10...6.70
Shutoff
electromagnet Volt: 24

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1250
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 700
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 81.00...82.00
1000S.: (78.00...85.00)
3rd speed 1/min: 1480
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 1400
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 42.00...48.00
1000S.: (39.00...51.00)
8th speed 1/min: 1350
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 75.00...105.00
1000S.: (75.00...105.00)
9th speed 1/min: 1250
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 98.00...103.00
1000S.: (97.00...104.00)
12th speed 1/min: 900
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Del. quyntity cm3/: 93.50...94.50
1000S.: (90.50...97.50)
16th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet volt: 24
Del. quantity cm3/: 56.00...57.00
1000H.: (53.00...60.00)
20th speed 1/min: 700
Charge press. hPa: 1500
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 93.50...99.50
1000S.: (92.50...100.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Charge press. hPa: 1500
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 280
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 280
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 9.00...13.00
1000S.: (6.00...16.00)
Dispersion cm3/: 6.5
1000S.: (6.5)
2nd speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 2.00...8.00
1000S.: (0.00...10.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 110.00...170.00
1000S.: (110.00...170.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 50.00...90.00
1000S.: (50.00...90.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 100.00...160.00
1000S.: (100.00...160.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8

KF mm: KOT
MS1 mm: 1.41-1.66
Ya mm: 37.2...39.2
Yb mm: 44.9...43.5

Remarks:

:
:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Pump with slave plunger

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : CUM
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R582
Type number : 0 460 426 234
Customer Part-No. :

Customer-specific information
Customer : CASE

Engine : 6T-590

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Setting value mm: 3.00...3.40
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
Setting value bar: 3.70...4.30
Shutoff
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 900
Del. quantity cm3/
1000S.: 68.50...69.50
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 4.00...10.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
Del. quantity cm3/
1000S.: 51.00...57.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...130.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1000
TD travel mm: 4.60...5.40
mm: (4.30...5.70)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 750
TD travel mm: 3.00...3.40
mm: (2.50...3.90)
Shutoff
electromagnet Volt: 24
4th speed 1/min: 500

TD travel mm: 1.60...2.40
mm: (1.30...2.70)
Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2.80...3.40
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 750
Supply-pump
pressure bar: 3.70...4.30
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
Supply-pump
pressure bar: 4.70...5.30
Shutoff
electromagnet Volt: 24

Overlow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 24
Overflow : 41.70...86.18
quantity cm3/10s: (26.70...98.18)
2nd speed 1/min: 1000
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1250
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1200
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 20.00...40.00
1000S.: (20.00...40.00)
5th speed 1/min: 1160
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 51.00...57.00
1000S.: (48.00...60.00)
9th speed 1/min: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 67.00...70.00
1000S.: (65.50...71.50)
12th speed 1/min: 900
Shutoff
electromagnet Volt: 24
Del. quyntity cm3/: 68.50...69.50
1000S.: (66.00...72.00)
15th speed 1/min: 750
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 70.50...73.50
1000S.: (68.50...75.50)
20th speed 1/min: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 30.00...38.00
1000S.: (28.00...40.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 4.00...10.00
1000S.: (2.00...12.00)
Dispersion cm3/: 5.5
1000S.: (7.0)
2nd speed 1/min: 550
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 80.00...140.00
1000S.: (80.00...140.00)

2nd speed 1/min: 220
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 5.00...25.00
1000S.: (5.00...25.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 70.00...130.00
1000S.: (70.00...130.00)

Shutoff electromagnet:

Cut-in
 min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation		
K	mm:	-
KF	mm:	5.0...5.4
MS1	mm:	1.25-1.5
Ya	mm:	34.8...38.8
Yb	mm:	37.9...43.1

Remarks:
: C.D.C # 392 1739
: .

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : SOF
Edition : 01.94
replaces : 06.92
Calibrating oil : ISO-4113

Injection pump : VE4/9F2100R22-7
Type number : 0 460 494 189
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8144.67.220

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1800
Setting value mm: 7.60...8.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1800
Setting value bar: 6.30...6.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 2000
Del. quantity cm3/
1000S.: 43.50...44.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (2.5)

Low-idle speed regulation

Speed 1/min: 370
Del. quantity cm3/
1000S.: 8.00...12.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2350
Del. quantity cm3/
1000S.: 18.00...26.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 55.00...95.00
mind 1000S.: 55.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 8.30...9.10
mm: (8.00...9.40)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1800
TD travel mm: 7.60...8.00
mm: (7.10...8.50)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
TD travel mm: 1.30...2.10
mm: (0.90...2.30)

Shutoff
electromagnet Volt: 12
7.Rotacao 1/min: 1200
TD travel mm: 4.40...5.20
mm: (4.10...5.50)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3.20...3.80
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1800
Supply-pump
pressure bar: 6.30...6.90
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.70...7.30
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...5.00
1000S.: (0.00...5.00)
5th speed 1/min: 2350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 18.00...26.00
1000S.: (16.00...28.00)
9th speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 43.20...45.80
1000S.: (42.20...46.80)
10th speed 1/min: 1100
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 41.50...44.50
1000S.: (40.00...46.00)
Shutoff
electromagnet Volt: 12
12th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 43.50...44.50
1000S.: (41.70...46.30)
20th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 34.50...38.50
1000S.: (33.50...39.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 370
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 370
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 8.00...12.00
1000S.: (6.00...14.00)
Dispersion cm3/: 3.0
1000S.: (3.0)
2nd speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 1.50...8.50
1000S.: (1.50...8.50)

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...67.00
1000S.: (37.00...67.00)

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 55.00...95.00
1000S.: (55.00...95.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation		
K	mm:	-
KF	mm:	5.4...5.6
MS	mm:	1.7...1.9
XK	mm:	25.0...27.0
XL	mm:	11.8...15.8
Ya	mm:	37.9...39.9
Yb	mm:	43.3...49.7

Remarks:
:
Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : PEU
Edition : 12.93
replaces : 06.92
Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R162-2
Type number : 0 460 494 215
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD9 DEP

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 0.3
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.10...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Dispersion cm3/: 2.5
1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 28.00...29.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (2.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 5.00...11.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2440
Del. quantity cm3/
1000S.: 20.00...26.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 44.00...84.00
mind 1000S.: 44.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: -4.00...-12.00#
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250

TD-travel
difference mm: -0.7...-0.9 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.70...8.30
mm: (7.30...8.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 4.10...4.30
mm: (3.50...4.90)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 1.60...2.20
mm: (1.20...2.60)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump
pressure bar: 3.00...3.60
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 4.20...4.80
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.30...6.90
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...7.00
1000S.: (0.00...7.00)
3rd speed 1/min: 2540
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 9.00...16.00
1000S.: (8.00...17.00)
5th speed 1/min: 2440
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 20.00...26.00
1000S.: (19.00...27.00)
9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 26.50...30.50
1000S.: (26.50...30.50)
10th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 30.10...32.10
1000S.: (29.10...33.10)
11th speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 28.50...30.50
1000S.: (27.50...31.50)
12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 28.00...29.00
1000S.: (26.50...30.50)
20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 28.50...31.50
1000S.: (28.00...32.00)

Mech. shutoff:

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.00...11.00
1000S.: (4.00...12.00)
Dispersion cm3/: 2.5
1000S.: (3.0)
4th speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.50...3.50
1000S.: (1.00...5.00)

LFG-setting:
solidale con carcassa:

Idle delivery:

2nd speed 1/min: 470
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 7.00...9.00
1000S.: (4.00...12.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm3/ : 3.0...5.0" Z
difference 1000S.: (3.00...5.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Inj.-qty. cm3/: -4.0...-12.0#
difference 1000S.: (-2.0...-14.0)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : -0.7...-0.9 #
difference mm: (-0.70...-0.90)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.00...0.20"Z
difference bar: (0.00...0.20)
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 10.8

1st speed 1/min: 1125
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 16.00...20.00
1000S.: (15.50...20.50)

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 40.00...80.00
1000S.: (40.00...80.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...35.00
1000S.: (15.00...35.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 44.00...84.00
1000S.: (44.00...84.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.7...6.0
MS mm: 1.3..1.55
XK mm: 17.0...19.0
XL mm: 14.2...17.6
Ya mm: 19.8...21.8
Yb mm: 79.4...91.6

Remarks:
:
Overflow restriction 0.55 mm - Part No.
..303

Z = Absolute delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 12.93
replaces : 06.92
Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R162-4
Type number : 0 460 494 224
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD9 DEP

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 0.3
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.10...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Dispersion cm3/: 2.5
1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 28.00...29.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (2.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 5.00...11.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2440
Del. quantity cm3/
1000S.: 20.00...26.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 44.00...84.00
mind 1000S.: 44.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: -4.00...-12.00#
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250

TD-travel
difference mm: -0.7...-0.9 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.70...8.30
mm: (7.30...8.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 4.10...4.30
mm: (3.50...4.90)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 1.60...2.20
mm: (1.20...2.60)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump
pressure bar: 3.00...3.60
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 4.20...4.80
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.30...6.90
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...7.00
1000S.: (0.00...7.00)
3rd speed 1/min: 2540
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 9.00...16.00
1000S.: (8.00...17.00)
5th speed 1/min: 2440
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 20.00...26.00
1000S.: (19.00...27.00)
9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 26.50...30.50
1000S.: (26.50...30.50)
10th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 30.10...32.10
1000S.: (29.10...33.10)
11th speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 28.50...30.50
1000S.: (27.50...31.50)
12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 28.00...29.00
1000S.: (26.50...30.50)
20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 28.50...31.50
1000S.: (28.00...32.00)

Mech. shutoff:

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.00...11.00
1000S.: (4.00...12.00)
Dispersion cm3/: 2.5
1000S.: (3.0)
4th speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.50...3.50
1000S.: (1.00...5.00)

LFG-setting:
solidale con carcassa:

Idle delivery:

2nd speed 1/min: 470
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 7.00...9.0C
1000S.: (4.00...12.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm3/ : 3.0...5.0" Z
difference 1000S.: (3.00...5.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Inj.-qty. cm3/: -4.0...-12.0#
difference 1000S.: (-2.0...-14.0)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : -0.7...-0.9 #
difference mm: (-0.70...-0.90)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.00...0.20"Z
difference bar: (0.00...0.20)
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 10.8

1st speed 1/min: 1125
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 16.00...20.00
1000S.: (15.50...20.50)

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 40.00...80.00
1000S.: (40.00...80.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...35.00
1000S.: (15.00...35.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 44.00...84.00
1000S.: (44.00...84.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation		
K	mm:	3.2...3.4
KF	mm:	5.7...6.0
MS	mm:	1.3..1.55
XK	mm:	17.0...19.0
XL	mm:	14.2...17.6
Ya	mm:	19.8...21.8
Yb	mm:	79.4...91.6

Remarks:
:
Overflow restriction 0.55 mm - Part No.
..303

Z = Absolute delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : FEU
Edition : 01.94
replaces : 03.93
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R445
Type number : 0 460 494 278
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD 9 TE-L

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 42.00...48.00
Electronically : 40.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 53.50...54.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 36.50...37.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 440
Charge press hPa: -
Del. quantity cm3/
1000S.: 15.00...17.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 6.00...7.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 12.00...16.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 150
Del. quantity cm3/: 37.00...67.00
mind 1000S.: 37.00

Shutoff
electromagnet Volt: 12

load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: -
Inj.-qty. cm3/
difference 1000S.: -11.0...-15.0 #
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
Charge press hPa: -
TD-travel
difference mm: -0.90..-1.1 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 1000
TD travel mm: 6.10...6.90
mm: (5.80...7.20)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 3.40...3.80
mm: (2.90...4.30)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 1.10...1.90
mm: (0.80...2.20)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.00...4.60
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.30...5.90
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.20...7.80
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750*
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 5.8
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 45.50...46.50
1000S.: (43.00...49.00)
2nd speed 1/min: 2750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 2575
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 12.00...16.00
1000S.: (10.00...18.00)
8th speed 1/min: 2375
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 34.00...44.00
1000S.: (33.00...45.00)
9th speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 49.10...51.10
1000S.: (47.90...52.30)
10th speed 1/min: 2000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 51.00...53.00
1000S.: (49.80...54.20)
12th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 53.50...54.50
1000S.: (51.80...56.20)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 36.50...37.50
1000S.: (34.00...40.00)
20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 46.80...49.80
1000S.: (45.30...51.30)

Mech. shutcff:
Mech. Abstellung:

1st speed 1/min: 2000
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 440
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...17.00
1000S.: (12.00...20.00)
Dispersion cm3/: 2.0
1000S.: (3.0)

High Idle:

1st speed 1/mi: 490
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...17.00
1000S.: (12.00...20.00)

Residual:

1.Rotacao 1/min: 490
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 8.00...9.00
1000S.: (6.50...10.50)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Charge press. hPa: -
Inj.-qty. cm3/ : -11.0..-15.0#
difference 1000S.: -(8.0...18.0) #
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: -
Inj.-qty. cm3/: 2.00...8.00"Z
difference 1000S.: (2.00...8.00)"Z
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
Charge press. hPa: -
TD-travel : -0.9...-1.1 #
difference mm: (-0.9...-1.1) #
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: -
TD-travel : -2.1...-2.5 "
difference mm: (1.60...3.00) "
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press. hPa: -
TD-travel : ALFB = 12.0 V
difference mm: 0.00...0.60 "
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Charge press. hPa: -
Supply pump-
pressure : -0.9...-1.50"
difference bar: -
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

Spacing mm: 8,5

1st speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 27.0...35.0
1000S.: MIKROSCHALTER

Automatic starting fuel delivery:

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 25.00...45.00
1000S.: (25.00...45.00)

3rd speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 50.00...56.00
1000S.: (45.50...60.50)

4th speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...67.00
1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation		
K	mm:	3.2...3.4
KF	mm:	K-OT
LDA stroke	mm:	5.8
Ya	mm:	18.8...22.8
Yb	mm:	78.0...92.0

Remarks:
:
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Overflow restriction 0.55 mm - Part No. ..303

Z = Absolute delivery

Pump with slave plunger

Pump with disconnectable load-sensitive start of delivery (ALFB)

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : PEU
Edition : 12.93
replaces : 03.93
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R472
Type number : 0 460 494 309
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD 9 TE-Y CATA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 3.90...4.30
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 5.40...6.00
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 53.50...54.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 36.50...37.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 12.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 6.00...7.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 12.00...16.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 150
Del. quantity cm3/: 37.00...67.00
mind 1000S.: 37.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: -
Inj.-qty. cm3/
difference 1000S.: 34.00...36.00#Z
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1500
Charge press hPa: -
TD-travel
difference mm: 2.50...2.70#Z
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 1000
TD travel mm: 6.10...6.90
mm: (5.80...7.20)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 3.90...4.30
mm: (3.40...4.80)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 0.80...1.60
mm: (0.50...1.90)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 900
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.90...4.50
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.40...6.00
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.50...7.10
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750*
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 5.9
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 45.50...46.50
1000S.: (43.00...49.00)
2nd speed 1/min: 2750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 2575
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 12.00...16.00
1000S.: (10.00...18.00)
8th speed 1/min: 2375
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 34.00...44.00
1000S.: (33.00...45.00)
9th speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 49.10...51.10
1000S.: (47.90...52.30)
10th speed 1/min: 2000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 51.00...53.00
1000S.: (49.80...54.20)
12th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 53.50...54.50
1000S.: (51.80...56.20)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.50...38.50
1000S.: (35.00...41.00)
20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 46.80...49.80
1000S.: (45.30...51.30)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 2000
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 12.00...14.00
1000S.: (9.00...17.00)

High Idle:

1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 11.00...13.00
1000S.: (8.00...16.00)

Residual:

1.Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.00...7.00
1000S.: (4.50...8.50)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Charge press. hPa: -
Inj.-qty. cm3/ : 34.0...36.0#Z
difference 1000S.: (31.5...39.5)#Z
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: -
Inj.-qty. cm3/: 2.00...8.00"Z
difference 1000S.: (2.00...8.00)"Z
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
Charge press. hPa: -
TD-travel : 2.50...2.70#Z
difference mm: (2.50...2.70)#Z
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: -
TD-travel : 0.30...1.70"Z
difference mm: (0.20...1.80)"Z
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Charge press. hPa: -
TD-travel : ALFB = 12 V
difference mm: 0.00...0.60 "
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1500
Charge press. hPa: -
Supply pump-
pressure : 3.90...5.10"Z
difference bar: -
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

Spacing mm: 8.5

1st speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 27.00...35.0
1000S.: MIKROSCHALTER

Automatic starting fuel delivery:

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 25.00...45.00
1000S.: (25.00...45.00)

3rd speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 50.00...56.00
1000S.: (45.50...60.50)

4th speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...67.00
1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation		
K	mm:	3.2...3.4
KF	mm:	K-OT
MS	mm:	1.1...1.5
LDA stroke	mm:	5.9
Ya	mm:	18.8...22.8
Yb	mm:	78.0...92.0

Remarks:
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Overflow restriction 0.55 mm - Part No. ..303

Z = Absolute delivery

Pump with slave plunger

G03

Pump with disconnectable load-sensitive start of delivery (ALFB)

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : FIA
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2100R508
Type number : 0 460 494 339
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : M710 HT19.D

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 2.10...2.30
AFB/AFB
valve Volt: -

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 4.10...4.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 50.50...51.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 39.50...40.50
Shutoff
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 800
Del. quantity cm3/
1000S.: 1.50...3.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 25.00...31.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...80.00
mind 1000S.: 50.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: -

Inj.-qty. cm3/
difference 1000S.: -8.00...-16.00#
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1500
Charge press hPa: -
TD-travel
difference mm: -0.7...-0.90#
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 7.70...8.30
mm: (7.30...8.70)
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.10...2.30
mm: (1.60...2.80)
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 4.70...5.30
mm: (4.30...5.70)
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
6th speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 3.50...6.50
mm: (3.00...7.00)
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
8th speed 1/min: 500
Charge press. hPa: 1000
TD travel mm: 2.50...4.50
mm: (2.00...5.00)
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.10...7.70
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.50...6.10
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.10...4.70
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 75.06...119.54
quantity cm3/10s: (75.06...119.54)
2nd speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 97.30...180.70
quantity cm3/10s: (97.30...180.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750*
Charge-air pressure-setting
point hPa: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 44.50...45.50
1000S.: (42.50...47.50)
4th speed 1/min: 2500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 13.00...21.00
1000S.: (12.00...22.00)
5th speed 1/min: 2400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 25.00...31.00
1000S.: (23.00...33.00)
6th speed 1/min: 750
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 52.50...55.50
1000S.: (51.50...56.50)
9th speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 49.00...52.00
1000S.: (48.00...53.00)
12th speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 50.50...51.50
1000S.: (49.00...53.00)
16th speed 1/min: 600
Charge press. hPa: -
Shutoff
electromagnet volt: 12
Del. quantity cm3/: 39.50...40.50
1000H.: (37.50...42.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 12.00...16.00
1000S.: (10.00...18.00)
Dispersion cm3/: 2.5
1000S.: (2.5)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 4.00...10.00
1000S.: (2.50...11.50)

Residual:

1.Rotacao 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 1.50...3.50
1000S.: (0.50...4.50)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.50...19.00
1000S.: (13.00...21.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Charge press. hPa: -
Inj.-qty. cm3/ : -8.0...-16.0#
difference 1000S.: (-8.0...-16.0)#
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: -
Inj.-qty. cm3/: -9.0...-11.0'
difference 1000S.: (-9.0...-11.0)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
Charge press. hPa: -
TD-travel : -0.7...-0.9 #
difference mm: (-0.70...-0.90)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1500
Charge press. hPa: -
Supply pump-
pressure : -0.1...-0.3 '
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 18.50...20.50
1000S.: (17.50...21.50)

Automatic starting fuel delivery:

1st speed 1/min: 220
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 50.00...80.00
1000S.: (50.00...80.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 50.00...80.00
1000S.: (50.00...80.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation		
K	mm:	3.2...3.6
KF	mm:	5.6...5.8
MS	mm:	1.3...1.5
Ya	mm:	37.2...39.2
Yb	mm:	38.2...46.8

Ajustement Potentiometer:

Angle for
pot. °: 40...50
Supply voltage
pot. volt: 5.0
Output volt
pot. volt: 1.85

Remarks:
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Overflow restriction 0.75 mm - Part No. ..343,..344

Pump with slave plunger

Pump with disconnectable load-sensitive start of delivery (ALFB)

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : SOF
Edition : 01.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2100R22-8
Type number : 0 460 494 340
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8144.67.2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.36
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1800
Setting value mm: 7.60...8.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1800
Setting value bar: 6.30...6.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 2000
Del. quantity cm3/
1000S.: 43.50...44.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (2.5)

Low-idle speed regulation

Speed 1/min: 370
Del. quantity cm3/
1000S.: 8.00...12.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2350
Del. quantity cm3/
1000S.: 13.00...26.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 55.00...95.00
mind 1000S.: 55.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 8.30...9.10
mm: (8.00...9.40)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1800
TD travel mm: 7.60...8.00
mm: (7.10...8.50)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
TD travel mm: 1.30...2.10
mm: (0.90...2.30)

Shutoff
electromagnet Volt: 12
7.Rotacao 1/min: 1200
TD travel mm: 4.40...5.20
mm: (4.10...5.50)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3.20...3.80
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1800
Supply-pump
pressure bar: 6.30...6.90
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.70...7.30
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...5.00
1000S.: (0.00...5.00)
5th speed 1/min: 2350
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 18.00...26.00
1000S.: (16.00...28.00)
9th speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 43.20...45.80
1000S.: (42.20...46.80)
10th speed 1/min: 1100
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 41.50...44.50
1000S.: (40.00...46.00)
Shutoff
electromagnet Volt: 12
12th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 43.50...44.50
1000S.: (41.70...46.30)
20th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 34.50...38.50
1000S.: (33.50...39.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 370
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 370
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 8.50...12.50
1000S.: (6.50...14.50)
Dispersion cm3/: 3.0
1000S.: (3.0)
2nd speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 1.50...8.50
1000S.: (1.50...8.50)

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...67.00
1000S.: (37.00...67.00)

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 55.00...95.00
1000S.: (55.00...95.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation		
K	mm:	-
KF	mm:	5.4...5.6
MS	mm:	1.7...1.9
SVS max.	mm:	5.9
Ya	mm:	37.9...39.9
Yb	mm:	43.3...49.7

Remarks:

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : PEU
Edition : C1.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R445-2
Type number : 0 460 494 342
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD 9 TE-L / TF-L

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 53.50...54.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 36.50...37.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 440
Charge press hPa: -
Del. quantity cm3/
1000S.: 15.00...17.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 6.00...7.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 12.00...16.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 150
Del. quantity cm3/: 37.00...67.00
mind 1000S.: 37.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: -
Inj.-qty. cm3/
difference 1000S.: -11.0...-15.0 #
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
Charge press hPa: -
TD-travel
difference mm: -0.90..-1.1 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 1000
TD travel mm: 6.10...6.90
mm: (5.80...7.20)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 3.40...3.80
mm: (2.90...4.30)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 1.10...1.90
mm: (0.80...2.20)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.00...4.60
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.30...5.90
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.20...7.80
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750*
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 5.8
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 45.50...46.50
1000S.: (43.00...49.00)
2nd speed 1/min: 2750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 2575
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 12.00...16.00
1000S.: (10.00...18.00)
8th speed 1/min: 2375
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 34.00...44.00
1000S.: (33.00...45.00)
9th speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 49.10...51.10
1000S.: (47.90...52.30)
10th speed 1/min: 2000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 51.00...53.00
1000S.: (49.80...54.20)
12th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 53.50...54.50
1000S.: (51.80...56.20)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 36.50...37.50
1000S.: (34.00...40.00)
20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 46.80...49.80
1000S.: (45.30...51.30)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 2000
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 440
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...17.00
1000S.: (12.00...20.00)

High Idle:

1st speed 1/mi: 490
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...17.00
1000S.: (12.00...20.00)
Dispersion cm3/: 2.0
1000S.: (3.0)

Residual:

1.Rotacao 1/min: 490
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 8.00...9.00
1000S.: (6.50...10.50)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Charge press. hPa: -
Inj.-qty. cm3/ : -11.0..-15.0#
difference 1000S.: -(8.0...18.0) #
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: -
Inj.-qty. cm3/: 2.00...8.00"Z
difference 1000S.: (2.00...8.00)"Z
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
Charge press. hPa: -
TD-travel : -0.9...-1.1 #
difference mm: (-0.9...-1.1) #
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: -
TD-travel : -2.1...-2.5 "
difference mm: (1.60...3.00) "
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press. hPa: -
TD-travel : ALFB = 12.0 V
difference mm: 0.00...0.60 "
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Charge press. hPa: -
Supply pump-
pressure : -0.9...-1.50"
difference bar: -
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

Spacing mm: 8,5

1st speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 27.0...35.0
1000S.: MIKROSCHALTER

Automatic starting fuel delivery:

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 25.00...45.00
1000S.: (25.00...45.00)

3rd speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 50.00...56.00
1000S.: (45.50...60.50)

4th speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...67.00
1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: K-0T
LDA stroke mm: 5.8
Ya mm: 28.8...32.8
Yb mm: 68.0...82.0

Remarks:

:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Overflow restriction 0.55 mm - Part No. ..303

Z = Absolute delivery

Pump with slave plunger

Pump with disconnectable load-sensitive start of delivery (ALFB)

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : PEU
Edition : 12.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R472-1
Type number : 0 460 494 344
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD 9 TE-Y

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 3.90...4.30
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 5.40...6.00
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 53.50...54.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 36.50...37.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 12.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 6.00...7.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 12.00...16.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 150
Del. quantity cm3/: 37.00...67.00
mind 1000S.: 37.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: -
Inj.-qty. cm3/
difference 1000S.: 34.00...36.00#Z
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1500
Charge press hPa: -
TD-travel
difference mm: 2.50...2.70#Z
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 1000
TD travel mm: 6.10...6.90
mm: (5.80...7.20)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 3.90...4.30
mm: (3.40...4.80)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 0.80...1.60
mm: (0.50...1.90)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 900
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.90...4.50
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.40...6.00
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.50...7.10
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750*
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 5.9
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 45.50...46.50
1000S.: (43.00...49.00)
2nd speed 1/min: 2750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 2575
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 12.00...16.00
1000S.: (10.00...18.00)
8th speed 1/min: 2375
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 34.00...44.00
1000S.: (33.00...45.00)
9th speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 49.10...51.10
1000S.: (47.90...52.30)
10th speed 1/min: 2000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 51.00...53.00
1000S.: (49.80...54.20)
12th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quyntity cm3/: 53.50...54.50
1000S.: (51.80...56.20)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.50...38.50
1000S.: (35.00...41.00)
20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 46.80...49.80
1000S.: (45.30...51.30)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 2000
Charge press. hPa: 1000
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 12.00...14.00
1000S.: (9.00...17.00)

High Idle:

1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 11.00...13.00
1000S.: (8.00...16.00)

Residual:

1.Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.00...7.00
1000S.: (4.50...8.50)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Charge press. hPa: -
Inj.-qty. cm3/ : 34.0...36.0#Z
difference 1000S.: (31.5...39.5)#Z
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: -
Inj.-qty. cm3/: 2.00...8.00"Z
difference 1000S.: (2.00...8.00)"Z
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
Charge press. hPa: -
TD-travel : 2.50...2.70#Z
difference mm: (2.50...2.70)#Z
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: -
TD-travel : 0.30...1.70"Z
difference mm: (0.20...1.80)"Z
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Charge press. hPa: -
TD-travel : ALFB = 12 V
difference mm: 0.00...0.60 "
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1500
Charge press. hPa: -
Supply pump-
pressure : 3.90...5.10"Z
difference bar: -
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)

Spacing mm: 8.5

1st speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 27.00...35.0
1000S.: MIKROSCHALTER

Automatic starting fuel delivery:

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 25.00...45.00
1000S.: (25.00...45.00)

3rd speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 50.00...56.00
1000S.: (45.50...60.30)

4th speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...67.00
1000S.: (37.00...67.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation		
K	mm:	3.2...3.4
KF	mm:	K-0T
MS	mm:	1.1...1.5
LDA stroke	mm:	5.9
Ya	mm:	28.8...32.8
Yb	mm:	68.0...82.0

Remarks:
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Overflow restriction 0.55 mm - Part No. ..303

Z = Absolute delivery

Pump with slave plunger

G18

Pump with disconnectable load-sensitive start of delivery (ALFB)

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 11.92
Test oil : ISO-4113

Combination no. : 0 400 844 091

Injection pump
Pump designation : PES4A90D410RS2666
EP type number : 0 410 894 029
Governor
Governor design. : RQV300...1400AB1065-12L
Governer no. : 0 420 212 207

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM364

1st version kW : 61.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 5.9...6.0

100 s: (5.7...6.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300
Rack travel in mm : 8.6...8.8
Del.quantity cm3/ : 0.8...1.2
100 s: (0.6...1.4)
Spread cm3 : 0.5
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 0.80...1.30
2nd speed rpm : 500
travel mm : 2.30...2.80
3rd speed rpm : 750
travel mm : 4.10...4.30
4th speed rpm : 1500
travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1400
Del.quantity : 59.0...60.0
1000 : (57.0...62.0)
Spread cm3 : 3.00
1000 : (7.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:
1st rack travel in: 9.50

Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.70

Testing:
Speed rpm : 100
Minimum rack trave: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.50...10.60
2nd speed rpm : 475
Rack travel in m: 11.50...11.60
3rd speed rpm : 850
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 475
Del.quantity cm3/ : 44.5...47.5
1000 s: (42.5...49.5)
Speed rpm : 850
Del.quantity cm3/ : 47.5...50.5
1000 s: (45.5...52.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100

G20

Del.quantity cm3/ : 75.5...90.5
1000 s: (73.0...93.0)
Rack travel in mm : 17.00...17.40

Remarks:
:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.02.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 844 102

Injection pump
Pump designation : PES4A95D410RS2809
EP type number : 0 410 894 993
Governor
Governor design. : RQV300...1400AB1065-27L
Governer no. : 0 420 212 238

Customer-spec. information
Customer : MB

Engine : OM364

1st version kW : 65.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.2...3.3
: (3.15...3.35)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.9...10.0

Del.quantity cm3/ : 6.5...6.6

100 s: (6.3...6.8)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 8.5...8.7
Del.quantity cm3/ : 0.8...1.2
100 s: (0.55...1.45)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 0.81...1.31
2nd speed rpm : 593
travel mm : 3.21...3.71
3rd speed rpm : 610
travel mm : 3.51...4.01
4th speed rpm : 927
travel mm : 4.53...5.13
5th speed rpm : 1463
travel mm : 7.89...8.39

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1450
Rack travel in mm : 15.2...17.8

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1400
Del.quantity : 65.0...66.0
1000 : (63.0...68.0)

Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 8.9
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1670
Speed rpm : 0...1.0

LOW IDLE 1
Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.6

Testing:
Speed rpm : 100
Minimum rack trave: 9.6
Speed rpm : 300
Rack travel in mm : 8.5...8.7

CONSTANT REGULATION
Speed rpm : 550...700

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1400
Del.quantity cm3/ : 65.0...66.0
1000 s: (63.0...68.0)
Spread cm3 : 3.50
1000 s: (6.0)
Speed rpm : 400
Del.quantity cm3/ : 47.0...51.0
1000 s: (45.5...53.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.9
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.5...8.7
Del.quantity cm3/ : 8.0...12.0
1000 s: (5.5...14.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 02.94
Replaces : 06.93
Test oil : ISO-4113

Combination no. : 0 400 866 186

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A0C2190 -63R
Governer no. : 0 420 233 302

Customer-spec. information
Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 156.6
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.6...5.8
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 122.5...124.5
1000 : (120.5...126.5)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 11.30
  Speed rpm : 1145...1155
2nd rack travel in: 4.00
  Speed rpm : 1255...1265
3rd rack travel in: 4.00
  Speed rpm : 1245...1275
4th rack travel in: 1300
  Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
 position degrees: 28...36
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 11.30
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
  1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 16.0...20.0
  1000 s: (13.5...22.5)
Spread cm3 : 6.00
  1000 s: (8.00)

Remarks:
  : C.D.C. # 3921099

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 02.94
Replaces : 15.06.93
Test oil : ISO-4113

Combination no. : 0 400 866 194

Injection pump
Pump designation : PES6A100D320/3RS2763
EP type number : 0 410 806 006
Governor
Governor design. : RSV415...1175A0C2190 -69R
Governer no. : 0 420 233 308

Customer-spec. information
Customer : C.D.C

Engine : 6 CT

1st version kW : 129.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1175
Rack travel in mm : 10.40...10.50
Del.quantity cm3/ : 9.8...10.0
100 s: (9.6...10.2)
Spread cm3 : 0.4
100 s: (0.6)

2nd speed rpm : 415.0
Rack travel in mm : 5.1...5.3
Del.quantity cm3/ : 1.4...1.8
100 s: (1.2...2.1)
Spread cm3 : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175
Del.quantity : 98.5...100.5
1000 : (96.5...102.5)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 9.40
  Speed rpm : 1240...1250
2nd rack travel in: 4.00
  Speed rpm : 1305...1315
3rd rack travel in: 4.00
  Speed rpm : 1300...1330
4th rack travel in: 1400
  Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
 position degrees: 32...40
Setting point w/out bumper spring
Speed rpm : 415
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 415
Rack travel in mm : 5.10...5.30

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1175
  Rack travel in m: 10.40...10.50
2nd speed rpm : 800
  Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del.quantity cm3/ : 101.0...105.0
1000 s: (99.0...107.0)

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 9.40
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 415
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 14.5...18.5
1000 s: (12.0...21.0)

Spread cm3 : 6.00
1000 s: (8.00)

Remarks:
: C.D.C. # 3921135

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 02.94
Replaces : 12.93
Test oil : ISO-4113

Combination no. : 0 401 840 774

Injection pump
Pump designation : PE12P120A520/4LS3861
EP type number : 0 411 820 729
Governor
Governor design. : RQV300...900PA668-9
Governor no. : 0 421 814 051

Customer-spec. information
Customer : MAN

Engine : D2842LE

1st version kW : 440.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
Phasing : 345
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.6

100 s: (1.1)

2nd speed rpm : 250.0
Rack travel in mm : 4.8...5.2
Del.quantity cm3/ : 1.8...2.4
100 s: (1.5...2.7)
Spread cm3 : 0.9
100 s: (1.3)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 250
travel mm : 0.96...1.16
2nd speed rpm : 440
travel mm : 3.24...3.64
3rd speed rpm : 490
travel mm : 3.83...4.23
4th speed rpm : 710
travel mm : 5.39...5.79
5th speed rpm : 970
travel mm : 8.36...8.56

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1000
Rack travel in mm : 8.70...11.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Del.quantity : 215.0...217.0
1000 : (212.0...220.0)
Spread cm3 : 6.50
1000 : (11.0)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 10.00
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1005...1035
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 150
Minimum rack trave: 6.00
Speed rpm : 250
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 310...430

START CUT-OUT

Speed 1/min : 200 (220)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 214.0...234.0
1000 s: (210.0...238.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.90...7.10
Del.quantity cm3/ : 18.0...24.0
1000 s: (15.0...27.0)
Spread cm3 : 9.00
1000 s: (13.00)

Remarks:
: MAN-NR. 3-7252

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.02.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 848 708B

Injection pump
Pump designation : PE8P110A320LS3802-10
EP type number : 0 411 818 710
Governor
Governor design. : RQ300/1150PA187-3
Governer no. : 0 421 801 133

Customer-spec. information
Customer : MB

Engine : OM442N

1st version kW : 218.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5- 4- 1

Phasing : 0-45-90-135-180-225-270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 11.3...11.5

100 s: (10.55...11.75)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0
Rack travel in mm : 8.0...8.2
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.3)
Spread cm3 : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 650
Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750
Del.quantity : 113.0...117.0
1000 : (110.5...117.5)
Spread cm3 : 4.00
1000 : (7.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 650
Rack travel in mm : 13.5

Testing:
1st rack travel in: 10.70

```
  Speed      rpm   : 1195...1211
2nd rack travel in: 4.00
  Speed      rpm   : 1240...1270
4th rack travel in: 1350
  Speed      rpm   : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed        rpm   : 300
Rack travel in mm  : 8.1

Testing:
Speed        rpm   : 100
Minimum rack trave: 10.20
Speed        rpm   : 300
Rack travel in mm  : 8.0...8.2
Rack travel in mm  : 2.00
Speed        rpm   : 420...460
Speed        rpm   : 550
Maximum rack trave: 1.80

Aneroid/Altitude
 Compensator Test


1st version
Setting
Speed        rpm   : 750
Rack travel  mm    : 11.70...11.80

Measurement
Speed        1/min : 750

1st pressure hPa   : -910
  Rack travel in m: 11.5...11.6
2nd pressure hPa   : -760
  Rack travel in m: 9.65...9.95

FUEL DELIVERY CHARACTERISTICS


1st version
Speed        rpm   : 750
Del.quantity cm3/  : 113.0...115.0
             1000 s: (110.5...117.5)
Spread        cm3  : 4.00
             1000 s: (7.00)
Speed        rpm   : 1150
Del.quantity cm3/  : 132.0...136.0
             1000 s: (129.0...139.0)
Spread        cm3  : 5.00
             1000 s: (8.00)


BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 10.70

H02
```

```
Speed        rpm   : 1195...1211

STARTING FUEL DELIVERY


Speed        rpm   : 100
Del.quantity cm3/  : 130.0...150.0
             1000 s: (126.0...154.0)

LOW IDLE

Speed        rpm   : 300
Rack travel in mm  : 8.0...8.2
Del.quantity cm3/  : 15.0...21.0
             1000 s: (12.5...23.5)
Spread        cm3  : 4.00
             1000 s: (7.00)

Remarks:
                   :
```

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 848 813

Injection pump
Pump designation : PE8P110A320LS3846-2
EP type number : 0 411 818 725
Governor
Governor design. : RQ300/1050PA187-30
Governer no. : 0 421 801 552

Customer-spec. information
Customer : MB-NFZ

Engine : OM442

1st version kW : 195.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 100...120

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 11.4...11.6

100 s: (11.1...11.8)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 300.0
Rack travel in mm : 7.7...8.3
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.4)
Spread cm3 : 0.6
100 s: (1.1)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 2.30...2.50
2nd speed rpm : 500
travel mm : 6.90...7.10
3rd speed rpm : 1107
travel mm : 7.50...7.70
4th speed rpm : 1270
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 650
Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Del.quantity : 114.0...116.0
1000 : (111.5...118.5)
Spread cm3 : 8.50
1000 : (13.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 650
Rack travel in mm : 13.5

Testing:
1st rack travel in: 10.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...2.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.8

Testing:
Speed rpm : 200
Minimum rack trave: 9.50
Speed rpm : 300
Rack travel in mm : 7.40...8.30
Rack travel in mm : 2.00
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 114.0...120.0
1000 s: (111.5...122.5)
Spread cm3 : 11.00
1000 s: (14.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 02.94
Replaces : 01.90
Test oil : ISO-4113

Combination no. : 0 401 849 748

Injection pump
Pump designation : PE10P120A520/4LS3849
EP type number : 0 411 829 708
Governor
Governor design. : RQ750PA947
Governer no. : 0 421 801 513

Customer-spec. information
Customer : MAN

Engine : D2840 LE

1st version kW : 352.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 9.00...12.00

H05

Firing order : 10- 9- 4- 1- 8- 7
- 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
216-261-288-333
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.3...4.7
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
4th rack travel in: 950
Speed rpm : 0.00...1.00

Remarks:
: MAN-NR.: 2-7975

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 02.94
Replaces : 01.90
Test oil : ISO-4113

Combination no. : 0 402 036 071

Injection pump
Pump designation : PES6P120A720/3LS470-2
EP type number : 0 412 026 050
Governor
Governor design. : RQ300/1100PA813-3
Governer no. : 0 421 801 422

Customer-spec. information
Customer : MAN

Engine : D2866TOH

1st version kW : 213.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 19.3...19.5

100 s: (19.0...19.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.7...4.9
Del.quantity cm3/ : 1.2...1.8
100 s: (0.9...2.1)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 45
Speed rpm : 750
Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750 *
Aneroid pressure h: 1000
Del.quantity : 193.5...195.5
1000 : (190.5...198.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 45.0...47.0

Setting point:
Speed rpm : 750
Rack travel in mm : 15.5

Testing:
1st rack travel in: 9.30

Speed rpm : 1145...1161
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.8

Testing:
Speed rpm : 200
Minimum rack trave: 6.30
Speed rpm : 300
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 385...425

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.40...10.50
2nd speed rpm : 750
Rack travel in m: 11.20...11.50
3rd speed rpm : 930
Rack travel in m: 11.00...11.20
4th speed rpm : 1030
Rack travel in m: 10.50...10.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 10.70...10.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 240
Rack travel in m: 9.00...9.20
3rd pressure hPa : 520
Rack travel in m: 10.00...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm3/ : 196.5...202.5
1000 s: (193.5...205.2)
Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm3/ : 186.0...192.0
1000 s: (183.0...195.0)
Aneroid pressure h: 520
Speed rpm : 500
Del.quantity cm3/ : 168.0...180.0
1000 s: (165.0...183.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MAN-NR.: 2-7896
: * = Q — LDA

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 825

Injection pump
Pump designation : PES6P110A720LS3282-
EP type number : 0 412 016 746
Governor
Governor design. : RQ300/1100PA800-3
Governer no. : 0 421 801 705

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 13.6...13.8
100 s: (13.3...14.0)

Spread cm3 : 0.4
100 s: (0.8)

2nd speed rpm : 300.0
Rack travel in mm : 9.0...9.3
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.4
100 s: (0.8)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 600
Rack travel in mm : 13.50...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 136.0...138.0
1000 : (133.5...140.5)
Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 106.0...114.0

Setting point:
Speed rpm : 600
Rack travel in mm : 14.0

Testing:

1st rack travel in: 12.15
  Speed rpm : 1140...1150
2nd rack travel in: 4.00
  Speed rpm : 1210...1240
4th rack travel in: 1250
  Speed rpm : 0.00...2.40

LOW IDLE 1
Control lever
 position degrees: 78.0...86.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:
Speed rpm : 200
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 370...410

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 113.0...116.0
  1000 s: (110.0...119.0)
Spread cm3 : 5.00
  1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 12.15
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
  1000 s: (126.0...154.0)

Remarks:
  :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 825

Injection pump
Pump designation : PES6P110A720LS3232-1
EP type number : 0 412 016 746
Governor
Governor design. : RQ300/1100PA800-3
Governer no. : 0 421 801 705

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 13.6...13.8

100 s: (13.3...14.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
Rack travel in mm : 9.0...9.3
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.4
100 s: (0.8)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 600
Rack travel in mm : 13.50...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 136.0...138.0
1000 : (133.5...140.5)
Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 97.0...105.0

Setting point:
Speed rpm : 600
Rack travel in mm : 14.0

Testing:

1st rack travel in: 12.15
  Speed rpm : 1140...1150
2nd rack travel in: 4.00
  Speed rpm : 1215...1245
4th rack travel in: 1300
  Speed rpm : 0.00...2.40

LOW IDLE 1
Control lever
 position degrees: 74.0...82.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:
Speed rpm : 200
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 370...410

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 113.0...116.0
  1000 s: (110.0...119.0)
Spread cm3 : 5.00
  1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 12.15
Speed rpm : 1140...1150

Remarks:
  :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 826

Injection pump
Pump designation : PES6P110A720LS3282-1
EP type number : 0 412 016 746
Governor
Governor design. : RQ300/1100PA786-3
Governer no. : 0 421 801 706

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 13.6...13.8

100 s: (13.3...14.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
Rack travel in mm : 9.0...9.3
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.4
100 s: (0.8)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 600
Rack travel in mm : 13.50...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 136.0...138.0
1000 : (133.5...140.5)
Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 106.0...114.0

Setting point:
Speed rpm : 600
Rack travel in mm : 14.0

Testing:

1st rack travel in: 12.15
  Speed rpm : 1140...1150
2nd rack travel in: 4.00
  Speed rpm : 1195...1225
4th rack travel in: 1250
  Speed rpm : 0.00...2.40

LOW IDLE 1
Control lever
 position degrees: 79.0...87.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:
Speed rpm : 200
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 370...410

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 113.0...116.0
  1000 s: (110.0...119.0)
Spread cm3 : 5.00
  1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 12.15
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
  1000 s: (126.0...154.0)

Remarks:
  :

Adjust full-load delivery by turning
temperature-dependent excess-fuel stop
for starting (TAS).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 826A

Injection pump
Pump designation : PES6P110A720LS3282-1
EP type number : 0 412 016 746
Governor
Governor design. : RQ300/1100PA786-3
Governer no. : 0 421 801 706

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 13.6...13.8

100 s: (13.3...14.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
Rack travel in mm : 8.85...9.45
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.4
100 s: (0.8)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 600
Rack travel in mm : 13.50...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 136.0...138.0
1000 : (133.5...140.5)
Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 97.0...105.0

Setting point:
Speed rpm : 600
Rack travel in mm : 14.0

Testing:

1st rack travel in: 12.15
  Speed rpm : 1140...1150
2nd rack travel in: 4.00
  Speed rpm : 1215...1245
4th rack travel in: 1250
  Speed rpm : 0.00...2.40

LOW IDLE 1
Control lever
 position degrees: 74.0...82.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:
Speed rpm : 200
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 325...365

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 113.0...116.0
  1000 s: (110.0...119.0)
Spread cm3 : 5.00
  1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 12.15
Speed rpm : 1140...1150

Remarks:
  :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 831

Injection pump
Pump designation : PES6P110A720LS3282-1
EP type number : 0 412 016 746
Governor
Governor design. : RQ300/1100PA1015-1
Governer no. : 0 421 801 707

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.45...12.55

Del.quantity cm3/ : 13.6...13.8

100 s: (13.3...14.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
Rack travel in mm : 7.8...8.4
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.4
100 s: (0.8)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 600
Rack travel in mm : 13.70...14.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 136.0...138.0
1000 : (133.5...140.5)
Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 107.0...115.0

Setting point:
Speed rpm : 600
Rack travel in mm : 14.2

Testing:

1st rack travel in: 11.50
  Speed rpm : 1140...1150
2nd rack travel in: 4.00
  Speed rpm : 1220...1250
4th rack travel in: 1300
  Speed rpm : 0.00...2.00

LOW IDLE 1
Control lever
 position degrees: 74.0...82.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.4

Testing:
Speed rpm : 200
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 330...370

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 113.0...116.0
  1000 s: (110.0...119.0)
Spread cm3 : 5.00
  1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 11.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
  1000 s: (126.0...154.0)

Remarks:
  :

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 831A

Injection pump
Pump designation : PES6P110A720LS3282-1
EP type number : 0 412 016 746
Governor
Governor design. : RQ300/1100PA1015-1
Governer no. : 0 421 801 707

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 13.6...13.8

100 s: (13.3...14.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
Rack travel in mm : 8.85..9.45
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.4
100 s: (0.8)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 600
Rack travel in mm : 13.50...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 136.0...138.0
1000 : (133.5...140.5)
Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 97.0...105.0

Setting point:
Speed rpm : 600
Rack travel in mm : 14.0

Testing:

1st rack travel in: 12.15
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1300
Speed rpm : 0.00...2.00

LOW IDLE 1
Control lever
position degrees: 74.0...82.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:
Speed rpm : 200
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 325...365

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 113.0...116.0
1000 s: (110.0...119.0)
Spread cm3 : 5.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.15
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:
:

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet	: IHC
Edition	: 03.94
Replaces	: 06.93
Test oil	: ISO-4113
Combination no.	: 0 402 046 839
Injection pump	
Pump designation	: PES6P100A320LS3306
EP type number	: 0 412 006 703
Governor	
Governor design.	: RQV350...1200PA1042 -1K
Governer no.	: 0 421 815 322
Customer-spec. information	
Customer	: NAVISTAR
Engine	: DTA-466
1st version kW	: 172.0
Rated speed	: 2400

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C	: 38...42
Overflow valve	: 2 417 413 076
Inlet press., bar	: 2.80
Overflow quantity min. 1/h	: 240...260
Test nozzle holder assembly	: 1 688 901 101
Opening pressure, bar	: 207...210
Orifice plate diameter mm	: 0,6
Test lines	: 1 680 750 015
Outside diameter x Wall thickness x Length mm	: 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant. per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 22...24

Prestroke mm	: 2.95...3.05
	: (2.90...3.10)
Rack travel in mm	: 14.00...17.00
Firing order	: 1- 5- 3- 6- 2- 4
Phasing	: 0-60-120-180-240-300
Tolerance + - °	: 0.50 (0.75)
Time to cyl. no.	: 1

BASIC SETTING

1st speed rpm	: 800
Rack travel in mm	: 14.20...14.30
Del.quantity cm3/	: 16.3...16.5
100 s:	(16.1...16.7)
Spread cm3	: 0.8
100 s:	(1.2)
2nd speed rpm	: 350
Rack travel in mm	: 6.1...6.3
Del.quantity cm3/	: 1.5...1.9
100 s:	(1.3...2.2)
Spread cm3	: 0.4
100 s:	(0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm	: 350
travel mm	: 1.82...2.02
2nd speed rpm	: 500
travel mm	: 3.50...3.90
3rd speed rpm	: 800
travel mm	: 6.20...6.60
4th speed rpm	: 1250
travel mm	: 9.30...9.50
5th speed rpm	: 1400
travel mm	: 10.55...10.95

GUIDE SLEEVE POSITION

Control-lever position	
Degree:	-1
Speed rpm	: 1440
Rack travel in mm	: 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 800
Aneroid pressure h: 1200
Del.quantity : 163.0...165.0
1000 : (161.0...167.0)
Spread cm3 : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 13.50
Speed rpm : 1260...1290
2nd rack travel in: 4.00
Speed rpm : 1445...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.20

Testing:
Speed rpm : 275
Minimum rack trave: 7.70
Speed rpm : 350
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION
Speed rpm : 350...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 800
Rack travel in m: 14.20...14.30
2nd speed rpm : 1200
Rack travel in m: 14.50...14.70
3rd speed rpm : 650
Rack travel in m: 13.30...13.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 14.50...14.70

Measurement

H21

Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 10.30...10.70
2nd pressure hPa : 310
Rack travel in m: 11.20...11.30
3rd pressure hPa : 655
Rack travel in m: 13.10...13.50

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm3/ : 168.0...172.0
1000 s: (166.0...174.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 800
Del.quantity cm3/ : 70.5...74.5
1000 s: (68.5...76.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 1260...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...160.0
1000 s: (115.0...165.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm3 : 4.00
1000 s: (6.50)

Remarks:
: NAVISTAR #1819914C91

Bow dimension:
Sliding-sleeve position = 37.0 mm
Setting and blocking of pointer of

start-of-delivery sensor on cyl. 1
start of delivery

Delivery-valve spring pre-tension =
6.30...6.40 mm.
Permissible alteration from 6.00...6.70
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.02.9493
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 782

Injection pump
Pump designation : PE6P120A320LS7864-1
EP type number : 0 412 626 906
Governor
Governor design. : RQV350...1050PA1052-3
Governer no. : 0 421 814 069

Customer-spec. information
Customer : MB

Engine : OM401 LA

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.2...5.3
: (5.15...5.35)

Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350
Rack travel in mm : 5.1...5.3
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 350
travel mm : 1.02...1.42
2nd speed rpm : 403
travel mm : 1.72...2.22
3rd speed rpm : 770
travel mm : 4.67...5.17
4th speed rpm : 1108
travel mm : 9.48...9.78

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1190
Rack travel in mm : 10.1...12.7

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1000
Del.quantity : 200.0...202.0
1000 : (197.0...205.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 101...109

Testing:
1st rack travel in: 11.4
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 65...73

Testing:
Speed rpm : 250
Minimum rack trave: 8.70
Speed rpm : 350
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 400...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Rack travel mm : 9.9...10.2

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.45...10.55
2nd pressure hPa : 450
Rack travel in m: 11.75...11.95

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 550
Del.quantity cm3/ : 200.0...202.0
1000 s: (197.0...205.0)
Spread cm3 : 5.00
1000 s: (9.00)
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 203.0...207.0
1000 s: (200.0...210.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm3 : 3.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.4
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...190.0
1000 s: (166.0...194.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.1...5.3
Del.quantity cm3/ : 16.0...22.0
1000 s: (13.0...25.0)
Spread cm3 : 6.00
1000 s: (10.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 783

Injection pump
Pump designation : PE6P120A320LS7858
EP type number : 0 412 626 875
Governor
Governor design. : RQV300...1050PA1065 -1
Governer no. : 0 421 814 068

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

H25

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 0.93...1.33
2nd speed rpm : 370
travel mm : 1.75...2.25
3rd speed rpm : 420
travel mm : 2.18...2.68
4th speed rpm : 750
travel mm : 4.62...5.12
5th speed rpm : 1107
travel mm : 9.65...9.95

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1170
Rack travel in mm : 8.80...12.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050

Aneroid pressure h: 700
Del.quantity : 170.0...172.0
1000 : (167.0...175.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:
1st rack travel in: 10.15
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 64...72

Testing:
Speed rpm : 200
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 350...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 200
Rack travel mm : 10.50...10.60

Measurement
Speed 1/min : 400

1st pressure hPa : 700
Rack travel in m: 11.10...11.20
2nd pressure hPa : 250
Rack travel in m: 10.80...11.00
3rd pressure hPa : -
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 550
Del.quantity cm3/ : 160.0...164.0
1000 s: (157.0...167.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm3/ : 117.5...120.5
1000 s: (114.5...123.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0.. 135.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.15
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (121.0...149.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 786

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQV300...1050PA1065
Governer no. : 0 421 814 053

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 1.03...1.23
2nd speed rpm : 370
travel mm : 1.75...2.25
3rd speed rpm : 420
travel mm : 2.24...2.74
4th speed rpm : 750
travel mm : 4.62...5.12
5th speed rpm : 1108
travel mm : 9.71...9.91

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1170
Rack travel in mm : 10.40...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000

Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 101...109

Testing:
1st rack travel in: 11.70
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 65...73

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 300...400

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 12.95...13.05
2nd speed rpm : 1050
Rack travel in m: 12.95...13.05
3rd speed rpm : 400
Rack travel in m: 12.20...12.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 700
Pressure hPa : 1000
Rack travel mm : 12.95...13.05

Measurement
Speed 1/min : 400

1st pressure hPa : 550
Rack travel in m: 12.20...12.30
2nd pressure hPa : 300
Rack travel in m: 10.90...11.10
3rd pressure hPa : -

H28

Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 189.5...192.5
1000 s: (186.5...195.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)
Rack travel in mm : 13.50...14.00

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 787

Injection pump
Pump designation : PE6P120A32GLS7858
EP type number : 0 412 626 875
Governor
Governor design. : RQ300/1050PA1031-12
Governer no. : 0 421 801 681

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

J01

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 700
Del.quantity : 170.0...172.0
1000 : (167.0...175.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 87.0...95.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.15
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.20

Testing:
Speed rpm : 200
Minimum rack trave: 7.20
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement
Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 10.80...11.00
2nd pressure hPa : 200
Rack travel in m: 10.50...10.60
3rd pressure hPa : -
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 550
Del.quantity cm3/ : 160.0...164.0
1000 s: (157.0...167.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm3/ : 117.5...120.5
1000 s: (114.5...123.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.15
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 270.0...290.0
1000 s: (266.0...294.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 788

Injection pump
Pump designation : PE6P120A320LS7858
EP type number : 0 412 626 875
Governor
Governor design. : RQ300/1050PA1031-11
Governer no. : 0 421 801 680

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 18.9...19.1

100 s: (18.6...19.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 800
Del.quantity : 189.0...191.0
1000 : (186.0...194.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 90.0...98.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.75
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 800
Rack travel mm : 11.70...11.80

Measurement
Speed 1/min : 400

1st pressure hPa : 350
Rack travel in m: 11.20...11.30
2nd pressure hPa : 200
Rack travel in m: 10.50...10.70
3rd pressure hPa : -
Rack travel in m: 9.60...9.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm3/ : 182.0...186.0
1000 s: (179.0...189.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.75
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 789

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/1050PA1031-10
Governer no. : 0 421 801 679

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.4...6.0
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 800
Del.quantity : 201.0...203.0
1000 : (198.0...206.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 91.0...99.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.35
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 72.0...80.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 800
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 400

1st pressure hPa : 350
Rack travel in m: 11.00...11.10
2nd pressure hPa : 200
Rack travel in m: 10.60...10.80
3rd pressure hPa : -
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm3/ : 195.0...199.0
1000 s: (192.0...202.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.35
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 270.0...290.0
1000 s: (266.0...294.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 793

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/1050PA1030-8
Governer no. : 0 421 801 673

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.4...6.0
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 800
Del.quantity : 201.0...203.0
1000 : (198.0...206.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 89.0...97.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.35
  Speed rpm : 1090...1106
2nd rack travel in: 4.00
  Speed rpm : 1165...1195
4th rack travel in: 1300
  Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
 position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
 Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 800
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 400

1st pressure hPa : 350
  Rack travel in m: 11.00...11.10
2nd pressure hPa : 200
  Rack travel in m: 10.60...10.80
3rd pressure hPa : -
  Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm3/ : 195.0...199.0
 1000 s: (192.0...202.0)
Spread cm3 : 8.00
 1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
 1000 s: (145.5...154.5
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
 1000 s: (123.0...131.0)
Spread cm3 : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

 full load rack tr: 11.35
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...70.0
 1000 s: (36.0...74.0)
Rack travel in mm : 9.90...10.30

Remarks:
 :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet	: MB
Edition	: 02.94
Replaces	: 10.93
Test oil	: ISO-4113
Combination no.	: 0 402 646 794
Injection pump	
Pump designation	: PE6P120A320LS7853
EP type number	: 0 412 626 875
Governor	
Governor design.	: RQV300...1050PA1033 -9
Governer no.	: 0 421 814 028
Customer-spec. information	
Customer	: MERCEDES-BENZ
Engine	: OM401 LA
1st version kW	: 200.0
Rated speed	: 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C	: 38...42
Overflow valve	: 1 417 413 025
Inlet press., bar	: 1.50
Overflow quantity min. 1/h	: 100...120
Test nozzle holder assembly	: 1 688 901 105
Opening pressure, bar	: 207...210
Orifice plate diameter mm	: 0,8
Test lines	: 1 680 750 075
Outside diameter x Wall thickness x Length mm	: 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant. per values _____

J09

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm	: 5.50...5.60
	: (5.45...5.65)
Rack travel in mm	: 20.00...21.00
Firing order	: 6- 3- 5- 2- 4- 1
Phasing	: 0-60-120-180-240-300
Tolerance + - °	: 0.30 (0.75)
Time to cyl. no.	: 6

BASIC SETTING

1st speed rpm	: 1050
Rack travel in mm	: 11.70...11.80
Del.quantity cm3/	: 18.9...19.1
100 s:	(18.6...19.4)
Spread cm3	: 0.5
100 s:	(0.9)
2nd speed rpm	: 300
Rack travel in mm	: 4.9...5.5
Del.quantity cm3/	: 1.6...2.2
100 s:	(1.3...2.5)
Spread cm3	: 0.6
100 s:	(1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm	: 300
travel mm	: 0.50...1.00
2nd speed rpm	: 575
travel mm	: 4.30...4.80
3rd speed rpm	: 625
travel mm	: 4.80...5.30
4th speed rpm	: 830
travel mm	: 5.90...6.40
5th speed rpm	: 1109
travel mm	: 8.20...8.70

GUIDE SLEEVE POSITION

Control-lever position Degree:	-1
Speed rpm	: 1160
Rack travel in mm	: 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 800
Del.quantity : 189.0...191.0
1000 : (186.0...194.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 10.75
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 77...85
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 800
Rack travel mm : 11.70...11.80

Measurement
Speed 1/min : 400

1st pressure hPa : 350
Rack travel in m: 11.20...11.30
2nd pressure hPa : 200
Rack travel in m: 10.50...10.70
3rd pressure hPa : -
Rack travel in m: 9.60...9.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm3/ : 182.0...186.0
1000 s: (179.0...189.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.75
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet	: MB
Edition	: 02.94
Replaces	: 10.93
Test oil	: ISO-4113
Combination no.	: 0 402 646 795
Injection pump	
Pump designation	: PE6P120A320LS7858
EP type number	: 0 412 626 875
Governor	
Governor design.	: RQV300...1050PA1033 -8
Governer no.	: 0 421 814 027
Customer-spec. information	
Customer	: MERCEDES-BENZ
Engine	: OM401 LA
1st version kW	: 180.0
Rated speed	: 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C	: 38...42
Overflow valve	: 1 417 413 025
Inlet press., bar	: 1.50
Overflow quantity min. 1/h:	100...120
Test nozzle holder assembly	: 1 688 901 105
Opening pressure, bar	: 207...210
Orifice plate diameter mm	: 0,8
Test lines	: 1 680 750 075
Outside diameter x Wall thickness x Length mm	: 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant. per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm	: 5.50...5.60
	: (5.45...5.65)
Rack travel in mm	: 20.00...21.00
Firing order	: 6- 3- 5- 2- 4- 1
Phasing	: 0-60-120-180-240-300
Tolerance + - °	: 0.30 (0.75)
Time to cyl. no.	: 6

BASIC SETTING

1st speed rpm	: 1050
Rack travel in mm	: 11.10...11.20
Del.quantity cm3/	: 17.0...17.2
100 s:	(16.7...17.5)
Spread cm3	: 0.5
100 s:	(0.9)
2nd speed rpm	: 300
Rack travel in mm	: 4.9...5.5
Del.quantity cm3/	: 1.6...2.2
100 s:	(1.3...2.5)
Spread cm3	: 0.6
100 s:	(1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm	: 300
travel mm	: 0.52...0.92
2nd speed rpm	: 575
travel mm	: 4.27...4.77
3rd speed rpm	: 625
travel mm	: 4.72...5.22
4th speed rpm	: 840
travel mm	: 5.94...6.44
5th speed rpm	: 1109
travel mm	: 8.27...8.57

GUIDE SLEEVE POSITION

Control-lever position Degree:	-1
Speed rpm	: 1170
Rack travel in mm	: 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 700
Del.quantity : 170.0...172.0
1000 : (167.0...175.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117.0..125.0

Setting point:
Speed rpm : 1170
Rack travel in mm : 10.1

Testing:
1st rack travel in: 10.15
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 79...87
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.20

Testing:
Speed rpm : 200
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement
Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 10.80...11.00
2nd pressure hPa : 200
Rack travel in m: 10.50...10.60
3rd pressure hPa : -
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 550
Del.quantity cm3/ : 160.0...164.0
1000 s: (157.0...167.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm3/ : 117.5...120.5
1000 s: (114.5...123.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.15
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (121.0...149.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet	: MB
Edition	: 02.94
Replaces	: 08.93
Test oil	: ISO-4113
Combination no.	: 0 402 646 796
Injection pump	
Pump designation	: PE6P120A320LS7858
EP type number	: 0 412 626 875
Governor	
Governor design.	: RQ300/1050PA1030-5
Governer no.	: 0 421 801 665
Customer-spec. information	
Customer	: MERCEDES-BENZ
Engine	: OM401 LA
1st version kW	: 200.0
Rated speed	: 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C	: 38...42
Overflow valve	: 1 417 413 025
Inlet press., bar	: 1.50
Overflow quantity min. 1/h	: 100...120
Test nozzle holder assembly	: 1 688 901 105
Opening pressure, bar	: 207...210
Orifice plate diameter mm	: 0,8
Test lines	: 1 680 750 075
Outside diameter x Wall thickness x Length mm	: 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant. per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm	: 5.50...5.60
	: (5.45...5.65)
Rack travel in mm	: 20.00...21.00
Firing order	: 6- 3- 5- 2- 4- 1
Phasing	: 0-60-120-180-240-300
Tolerance + - °	: 0.30 (0.75)
Time to cyl. no.	: 6

BASIC SETTING

1st speed rpm	: 1050
Rack travel in mm	: 11.70...11.80
Del.quantity cm3/	: 18.9...19.1
100 s:	(18.6...19.4)
Spread cm3	: 0.5
100 s:	(0.9)
2nd speed rpm	: 300
Rack travel in mm	: 5.1...5.3
Del.quantity cm3/	: 1.6...2.2
100 s:	(1.3...2.5)
Spread cm3	: 0.6
100 s:	(1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 108...110

Speed rpm	: 600
Rack travel in mm	: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version	
Speed rpm	: 1050
Aneroid pressure h:	800
Del.quantity	: 189.0...191.0
1000	: (186.0...194.0)
Spread cm3	: 5.00
1000	: (9.00)

RATED SPEED

1st version
Control lever position degrees: 88.0...96.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.75
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 800
Rack travel mm : 11.70...11.80

Measurement
Speed 1/min : 400

1st pressure hPa : 350
Rack travel in m: 11.20...11.30
2nd pressure hPa : 200
Rack travel in m: 10.50...10.70
3rd pressure hPa : -
Rack travel in m: 9.60...9.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm3/ : 182.0...186.0
1000 s: (179.0...189.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.75
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...65.0
1000 s: (41.0...69.0)
Rack travel in mm : 9.60...10.00

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 797

Injection pump
Pump designation : PE6P120A320LS7858
EP type number : 0 412 626 875
Governor
Governor design. : RQ300/1050PA1030-4
Governer no. : 0 421 801 664

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 700
Del.quantity : 170.0...172.0
1000 : (167.0...175.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 87..0...95.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.15
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack trave: 7.60
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement
Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 10.80...11.00
2nd pressure hPa : 200
Rack travel in m: 10.50...10.50
3rd pressure hPa : -
Rack travel in m: 9.90...10.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 550
Del.quantity cm3/ : 160.0...164.0
1000 s: (157.0...167.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm3/ : 117.5...120.5
1000 s: (114.5...123.5)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.15
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...70.0
1000 s: (36.0...74.0)
Rack travel in mm : 9.90...10.30

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 799

Injection pump
Pump designation : PE6P120A320LS7852
EP type number : 0 412 626 871
Governor
Governor design. : RQ300/950PA1031-5
Governer no. : 0 421 801 657

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 23.4...23.6
100 s: (23.1...23.9)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.6...6.2
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1200
Del.quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 92.0...100.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.05
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:
Speed rpm : 200
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1200
Rack travel mm : 14.00...14.10

Measurement
Speed 1/min : 400

1st pressure hPa : 550
Rack travel in m: 13.40...13.50
2nd pressure hPa : 250
Rack travel in m: 11.30...11.50
3rd pressure hPa : -
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 950
Del.quantity cm3/ : 228.0...232.0
1000 s: (225.0...235.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 203.0...206.0
1000 s: (200.0...209.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.05
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 255.0...275.0
1000 s: (251.0...279.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 976

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/1050PA1031
Governer no. : 0 421 801 642

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.70
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack trave: 7.10
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL
Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.90...13.10
2nd speed rpm : 700
Rack travel in m: 12.95...13.05
3rd speed rpm : 400
Rack travel in m: 12.20...12.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1000
Rack travel mm : 12.95...13.05

Measurement
Speed 1/min : 400

1st pressure hPa : 550
Rack travel in m: 12.20...12.30
2nd pressure hPa : 300
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 189.5...192.5
1000 s: (186.5...195.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 270.0...290.0
1000 s: (266.0...294.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 977

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/1050PA1030-1
Governer no. : 0 421 801 641

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.70
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00. .1.50

LOW IDLE 1
Control lever
position degrees: 67.0...75.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL
Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.90...13.10
2nd speed rpm : 700
Rack travel in m: 13.35...13.45

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1000
Rack travel mm : 12.95...13.05

Measurement
Speed 1/min : 400

1st pressure hPa : 550
Rack travel in m: 12.20...12.30
2nd pressure hPa : 300
Rack travel in m: 10.9...11.10
3rd pressure hPa : -
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050

Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 189.5...192.5
1000 s: (186.5...195.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.80...11.00

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 978

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/950PA1031-1
Governer no. : 0 421 801 643

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 91.0...99.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.00
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 71.0...79.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack trave: 9.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 390...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1000
Rack travel mm : 12.95...13.05

Measurement
Speed 1/min : 400

1st pressure hPa : 550
Rack travel in m: 12.20...12.30
2nd pressure hPa : 300
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 227.0...231.0
1000 s: (224.0...234.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 189.5...192.5
1000 s: (186.5...195.5)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 990...1006

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 979

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/950PA1032
Governer no. : 0 421 801 644

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 91.0...99.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.90
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 66.0...74.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1000
Rack travel mm : 12.95...13.05

Measurement
Speed 1/min : 400

1st pressure hPa : 550
Rack travel in m: 12.20...12.30
2nd pressure hPa : 300
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 227.0...231.0
1000 s: (224.0...234.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 189.5...192.5
1000 s: (186.5...195.5)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.10...10.40

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 980

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQV300...950PA1033
Governer no. : 0 421 813 990

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 1.10...1.50
2nd speed rpm : 567
travel mm : 4.40...5.00
3rd speed rpm : 780
travel mm : 6.00...6.60
4th speed rpm : 1010
travel mm : 8.50...8.70
5th speed rpm : 1190
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1066
Rack travel in mm : 10.60...13.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1000
Rack travel mm : 12.95...13.05

Measurement
Speed 1/min : 400

1st pressure hPa : 550
Rack travel in m: 12.20...12.30
2nd pressure hPa : 300
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

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1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 227.0...231.0
1000 s: (224.0...234.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 189.5...192.5
1000 s: (186.5...195.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 990...1000

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 983

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQV300...1050PA1033
-2
Governer no. : 0 421 813 994

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 0.54...0.94
2nd speed rpm : 575
travel mm : 4.27...4.77
3rd speed rpm : 830
travel mm : 5.88...6.38
4th speed rpm : 1107
travel mm : 8.23...8.53
5th speed rpm : 1290
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1160
Rack travel in mm : 10.40...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.70
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 300...400

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.90...13.10
3rd speed rpm : 700
Rack travel in m: 12.95...13.05

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1000
Rack travel mm : 12.95...13.05

Measurement
Speed 1/min : 400

1st pressure hPa : 550
Rack travel in m: 12.20...12.30
2nd pressure hPa : 300
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 189.5...192.5
1000 s: (186.5...195.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)
Rack travel in mm : 13.50...14.00

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 02.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 993

Injection pump
Pump designation : PE6P120A320LS7852-1
EP type number : 0 412 626 910
Governor
Governor design. : RQ300/1050PA1030-3
Governer no. : 0 421 801 653

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.6...6.2
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION
Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1100
Del.quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0